

PUBLICATIONS OF ROBERT O. RITCHIE

Books

1. R. O. Ritchie and D. Liu, *Introduction to Fracture Mechanics*, Elsevier, Oxford, UK, May 27, 2021, 168 pp; ISBN: 978-0-323-89822-5.

Books (edited)

1. R. O. Ritchie and J. Lankford, eds., *Small Fatigue Cracks*, TMS-AIME, Warrendale, PA, 1986, 665 pp.
2. S. D. Antolovich, R. O. Ritchie, and W. W. Gerberich, eds., *Mechanical Properties and Phase Transformations in Engineering Materials*, TMS-AIME, Warrendale, PA, 1986.
3. R. O. Ritchie and E. A. Starke, eds., *Fatigue'87, Proceedings of the Third International Conference on Fatigue and Fatigue Thresholds*, Charlottesville, VA, June 1987, vols. 1-3, EMAS Ltd., Warley, U.K., 1988, 1872 pp.
4. R. B. Thompson, R. O. Ritchie, J. L. Bassani, and R. H. Jones, eds., *Mechanics and Physics of Crack Growth: Application to Life Prediction*, Elsevier Sequoia, The Netherlands, 1988.
5. K. J. Marsh, R. A. Smith, and R. O. Ritchie, eds., *Fatigue Crack Measurement: Techniques and Applications*, EMAS Ltd., Warley, U.K., 1991, 554 pp.
6. R. O. Ritchie, B. N. Cox, and R. H. Dauskardt, eds., *Fatigue of Advanced Materials*, MCEP Publishing Ltd., Edgbaston, U.K., 1991, 492 pp.
7. V. V. Panasyuk, D. M. R. Taplin, M. C. Pandey, O. Ye Andreykiv, R. O. Ritchie, and P. Rama Rao, eds., *Advances in Fracture Resistance and Structural Integrity*, Elsevier Science, Oxford, U.K., Dec. 1994, 762 pp.
8. W. O. Soboyejo, T. S. Srivatsan, and R. O. Ritchie, eds., *Fatigue and Fracture of Ordered Intermetallic Materials II*, TMS, Warrendale, PA, 1995, 429 pp.
9. C. Moura Branco, R. O. Ritchie, and V. Sklenicka, eds., *Mechanical Behaviour of Materials at High Temperatures*, Kluwer Academic Publ., Dordrecht, The Netherlands, 1996, 725 pp.
10. B. L. Karihaloo, Y.-W. Mai, M. I. Ripley, and R. O. Ritchie, eds., *Advances in Fracture Research*, vols. 1-6, Pergamon, Oxford, U.K., March 1997.
11. K. S. Ravichandran, R. O. Ritchie and Y. Murakami, eds., *Small Fatigue Cracks: Mechanics, Mechanisms and Applications*, Elsevier, Oxford, U.K., 1999, 498 pp.
12. K. Ravi-Chandar, B. L. Karihaloo, T. Kishi, R. O. Ritchie, A. T. Yokobori, Jr., and T. Yokobori, eds., *Advances in Fracture Research*, Proceedings of ICF10, Pergamon, Oxford, U.K., Dec. 2001, CD-Rom.
13. W. O. Soboyejo, J. J. Lewandowski, and R. O. Ritchie, eds., *Mechanisms and Mechanics of Fracture: The John Knott Symposium*, TMS, Warrendale, PA, 2002, 362 pp.
14. I. Milne, R. O. Ritchie, and B. Karihaloo, Editors-in-Chief., *Comprehensive Structural Integrity: Fracture of Materials from Nano to Macro*, vols. 1-10, Elsevier Science, Oxford, U.K., 2003.
15. I. Milne, R. O. Ritchie, and B. Karihaloo, eds., *Comprehensive Structural Integrity: Fracture of Materials from Nano to Macro. Vol. 1: Structural Integrity Assessment - Examples and Case Studies*, Elsevier Science, Oxford, U.K., 2003, 509 pp.
16. R. O. Ritchie, and Y. Murakami, eds., *Comprehensive Structural Integrity: Fracture of Materials from Nano to Macro. Vol. 4: Cyclic Loading and Fatigue*, Elsevier Science, Oxford, U.K., 2003, 528 pp.

ⁱ Winner of the 2004 "Best Reference Work Award" by the American Society for Engineering Education.

17. M. A. Meyers, R. O. Ritchie, and M. Sarikaya, eds., *Nano and Microstructural Design of Advanced Materials*, Elsevier, Oxford, U.K., 2003, 303 pp.
18. A. Carpinteri, Y.-W. Mai, and R. O. Ritchie, eds., *Advances in Fracture Research*, Springer, AZ Dordrecht, The Netherlands, 2006, 262 pp.
19. J. E. Allison, J. W. Jones, J. M. Larsen and R. O. Ritchie, eds., *Very High Cycle Fatigue*, TMS, Warrendale, PA, 2007, 454 pp.

Patents

1. A. A. MacDowell, J. Nasiaka, A. Haboub, R. O. Ritchie and H. A. Bale, "In-Situ High-Temperature Test Apparatus, Useful in X-Ray Sources for Three-Dimensional Imaging of Materials, i.e., Polymer-Matrix Composites, Comprises Chamber Including Top Portion and Bottom Porttion that are Joined to Window Material", *U.S. Patent nos. US 2,014,161,223-A1, June 12, 2104; US 9,057,681-B2*, June 16, 2015.
2. A. P. Alivisatos, P. Ercius, A. C. K. Olson, R. O. Ritchie, S. N. Raja, S. Wu and D. Zhrebetsky, "Stress Sensing Nanocomposite Useful for Detecting Incipient Cracks in Structural Mechanics to Monitoring Forces in Biological Tissues, Comprises a Polymer Film Comprising Many Aggregated Fluorescent Tetrapod Nanocrystals", *U.S. Patent no. US 2018045590-A1*, Feb. 15, 2018.
3. S. N. Raja, D. Zhrebetsky, S. Wu, P. Ercius, A. C. K. Olson, P. Alivisatos, R. O. Ritchie and S. Govindjee, "Mechanisms of Local Stress Sensing in Multifunctional Polymer Films using Fluorescent Tetrapod Nanocrystals", *U.S. Patent no. US 10,429,256*, Oct. 1, 2019.
4. A. M. Minor, S. Zhao, R. Zhang, R. O. Ritchie, J. Ell and Q. Yu, "CryoForging Process to Create Nanotwinned Metals", *U.S. Patent*, applied for Sept, 2021; *UC case number BK-2022-029*.

Papers

1. R. O. Ritchie, G. G. Garrett and J. F. Knott, "Crack Growth Monitoring: Optimisation of the Electrical Potential Technique Using an Analogue Method," *International Journal of Fracture Mechanics*, vol. 7 (4), Dec. 1971, pp. 462-467.
2. G. Clark, R. O. Ritchie, and J. F. Knott, "Segregation Effects and the Toughness of Untempered Low-Alloy Steels," *Nature Physical Sciences*, vol. 239 (94), Oct. 1972, pp. 104-106.
3. R. O. Ritchie and J. F. Knott, "Mechanisms of Fatigue Crack Growth in Low Alloy Steel," *Acta Metallurgica*, vol. 21 (5), May 1973, pp. 639-648.
4. R. O. Ritchie, J. F. Knott, and J. R. Rice, "On the Relationship between Critical Tensile Stress and Fracture Toughness in Mild Steel," *Journal of Mechanics and Physics of Solids*, vol. 21 (6), June 1973, pp. 395-410.
5. R. O. Ritchie and J. F. Knott, "Effects of Fracture Mechanisms on Fatigue Crack Propagation," in *Mechanics and Mechanisms of Crack Growth*, M. J. May, ed., British Steel Corporation, Rotherham, U.K., 1973, pp. 201-225.
6. R. O. Ritchie, L. C. E. Geniets, and J. F. Knott, "Effects of Grain-Boundary Embrittlement on Fracture and Fatigue Crack Propagation in Low Alloy Steel," in *The Microstructure and Design of Alloys, Proceedings of the Third International Conference on the Strength of Metals and Alloys*, Cambridge, Aug. 1973, Institute of Metals/Iron and Steel Institute, London, U.K., vol. 1, 1973, pp. 124-128.
7. R. O. Ritchie and J. F. Knott, "Brittle Cracking Processes During Fatigue Crack Propagation," *Proceedings of the Third International Congress on Fracture*, Munich, April 1973, Verein Deutscher Eisenhüttenleute, Dusseldorf, Germany, vol. 6, paper V-434/A, 1973.

8. R. O. Ritchie, "The Influence of Fracture Mechanisms on Fatigue Crack Propagation," in *Practical Implications of Fracture Mechanisms*, Institution of Metallurgists, London, U.K., Series 2, No.10, 605-72-Y, 1973, pp. 73-87.
9. G. Clark, J. F. Knott, and R. O. Ritchie, "Fatigue Crack Propagation and Fracture in Temper-Brittle Low Alloy Steels," in *Materiálové Vady Ocelovych Vyroby*, Proceedings of the International Conference on Material Defects in Steel Products, Mariánské Lázně, Czechoslovakia, Nov. 1973, CSVTS, Czechoslovak Scientific and Technical Society, vol. 2, 1973, pp. 13-22.
10. R. O. Ritchie and J. F. Knott, "On the Influence of High Austenitizing Temperature and 'Overheating' on Fracture and Fatigue Crack Propagation in Low-Alloy Steel," *Metallurgical Transactions*, vol. 5 (3), March 1974, pp. 782-785.
11. R. O. Ritchie and J. F. Knott, "Micro Cleavage Cracking during Fatigue Crack Propagation in Low Strength Steel," *Materials Science and Engineering*, vol. 14 (1), April 1974, pp. 7-14.
12. R. O. Ritchie, "Contribution on Slow Fatigue Crack Growth and Threshold Behavior of a Medium Carbon Steel in Air and Vacuum," *Engineering Fracture Mechanics*, vol. 7 (1), March 1975, pp. 187-189.
13. C. J. Beevers, R. J. Cooke, J. F. Knott, and R. O. Ritchie, "Some Considerations of the Influence of Sub-Critical Cleavage Growth during Fatigue-Crack Propagation in Steels," *Metal Science*, vol. 9 (3), March 1975, pp. 119-126.
14. A. C. Pickard, R. O. Ritchie, and J. F. Knott, "Fatigue Crack Propagation in a Type 316 Stainless Steel Weldment," *Metals Technology*, vol. 2 (6), June 1975, pp. 253-263.
15. R. O. Ritchie, R. F. Smith, and J. F. Knott, "Effects of Thickness on Fibrous Fracture from a Notch and on Fatigue-Crack Propagation in Low-Strength Steel," *Metal Science*, vol. 9 (11), Nov. 1975, pp. 485-492.
16. R. O. Ritchie, B. Francis, and W. L. Server, "Evaluation of Toughness in AISI 4340 Alloy Steel Austenitized at Low and High Temperatures," *Metallurgical Transactions A*, vol. 7A (6), June 1976, pp. 831-838.
17. A. C. Pickard, R. O. Ritchie, and J. F. Knott, "Fracture Toughness and Fatigue Crack Propagation Studies in a Complex Aluminum Bronze," *Proceedings of the Fourth International Conference on the Strength of Metals and Alloys*, Nancy, Aug. 1976, vol. 2, pp. 473- 479.
18. M. F. Carlson, B. V. N. Rao, R. O. Ritchie, and G. Thomas, "Improvements in Strength and Toughness of Experimental Fe/Cr/C Type Steels," *Proceedings of the Fourth International Conference on the Strength of Metals and Alloys*, Nancy, Aug. 1976, vol. 2, pp. 509-513.
19. T. C. Lindley, C. E. Richards, and R. O. Ritchie, "The Mechanics and Mechanisms of Fatigue Crack Growth in Metals: A Review," *Metallurgia and Metal Forming*, vol. 43 (9), Sept. 1976, pp. 268-280.
20. R. O. Ritchie, "Effects of Strength and Grain Size on Near-Threshold Fatigue Crack Propagation in Ultra-High Strength Steel," in *Fracture 1977 - Advances in Research on the Strength and Fracture of Materials*, Proceedings of the Fourth International Conference on Fracture, D. M. R. Taplin, ed., vol. 2B, Pergamon Press, New York, 1977, pp. 1325-1331.
21. R. O. Ritchie, "Influence of Impurity Segregation on Temper Embrittlement and on Slow Fatigue Crack Growth and Threshold Behavior in 300-M High Strength Steel," *Metallurgical Transactions A*, vol. 8A (7), July 1977, pp. 1131-1140.
22. R. O. Ritchie, B. Francis, and W. L. Server, "Reply to Discussion of 'Evaluation of Toughness in AISI 4340 Alloy Steel Austenitized at Low and High Temperatures'", *Metallurgical Transactions A*, vol. 8A (7), July 1977, pp. 1197-1199.

23. ⁱⁱR. O. Ritchie, "Near-Threshold Fatigue Crack Propagation in Ultra-High Strength Steel: Influence of Load Ratio and Cyclic Strength," *Journal of Engineering Materials and Technology*, Transactions of ASME Series H, vol. 99 (3), July 1977, pp. 195-204.
24. R. O. Ritchie, "Influence of Microstructure on Near-Threshold Fatigue Crack Propagation in Ultra-High Strength Steel," *Metal Science*, vol. 11 (8/9), Aug./Sept. 1977, pp. 368-381.
25. M. F. Carlson and R. O. Ritchie, "On the Effect of Prior Austenite Grain Size on Near-Threshold Fatigue Crack Growth," *Scripta Metallurgica*, vol. 11 (12), Dec. 1977, pp. 1113-1118.
26. M. F. Carlson, and R. O. Ritchie, "Reply to Discussion of the Effect of Prior Austenite Grain Size on Near-Threshold Fatigue Crack Growth," *Scripta Metallurgica*, vol. 12 (7), 1978, pp. 613-614 (letter).
27. R. O. Ritchie, M. H. Castro-Cedeno, V. F. Zackay, and E. R. Parker, "Effects on Silicon Additions and Retained Austenite on Stress Corrosion Cracking in Ultra-High Strength Steels," *Metallurgical Transactions A*, vol. 9A (1), Jan. 1978, pp. 35-40.
28. R. O. Ritchie, and R. M. Horn, "Further Considerations on the Inconsistency of Toughness Evaluation of AISI 4340 Steel Austenitized at Increasing Temperatures," *Metallurgical Transactions A*, vol. 9A (3), March 1978, pp. 331-341.
29. ⁱⁱⁱR. M. Horn and R. O. Ritchie, "Mechanisms of Tempered Martensite Embrittlement in Low Alloy Steels," *Metallurgical Transactions A*, vol. 9A (8), Aug. 1978, pp. 1039-1053.
30. R. O. Ritchie, "On the Relationship between Fracture Toughness and Charpy V-Notch Energy in Ultra-High Strength Steel," in *What Does the Charpy Test Really Tell Us?* A. R. Rosenfield, *et al.*, eds., American Society for Metals, Metals Park, OH, 1978, pp. 54-73.
31. R. O. Ritchie, W. L. Server, and R. A. Wullaert, "A Simple Test Method for Measuring 'Valid' J_{Ic} Fracture Toughness in Charpy-Size Surveillance Specimens of Nuclear Pressure Vessel Steel," *International Journal of Fracture*, vol. 14 (4), Dec. 1978, pp. R329-R334.
32. R. O. Ritchie, W. L. Server, and R. A. Wullaert, "Response: Discussion of 'A Simple Test Method for Measuring 'Valid' J_{Ic} Fracture Toughness in Charpy-Size Surveillance Specimens of Nuclear Pressure Vessel Steel'", *International Journal of Fracture*, vol. 15 (3), August 1979, R139-142.
33. R. O. Ritchie, "Role of Environment in Near-Threshold Fatigue Crack Growth in Engineering Materials," in *Environment Sensitive Fracture of Engineering Materials*, Z. A. Forouli, ed., TMS-AIME, New York, NY, 1979, pp. 538-564.
34. R. O. Ritchie, "Discussion of Microstructural Aspects of the Threshold Condition of Non-Propagating Fatigue Cracks in Martensitic-Ferritic Structures," in *Fatigue Mechanisms*, J. T. Fong, ed., ASTM STP 675, American Society for Testing and Materials, Philadelphia, PA, 1979, pp. 364-366.
35. R. O. Ritchie, V. A. Chang, and N. E. Paton, "Influence of Retained Austenite on Fatigue Crack Propagation in HP 9-4-20 High Strength Alloy Steel," *Fatigue of Engineering Materials & Structures*, vol. 1 (1), 1979, pp. 107-121.
36. R. O. Ritchie and K. J. Bathe, "On the Calibration of the Electrical Potential Technique for Monitoring Crack Growth Using Finite Element Methods," *International Journal of Fracture*, vol. 15 (1), Feb. 1979, pp. 47-55.
37. M. E. Fine and R. O. Ritchie, "Fatigue Crack Initiation and Near-Threshold Crack Growth," in *Fatigue and Microstructure*, American Society for Metals, Metals Park, Ohio, 1979, pp. 245-278.
38. R. O. Ritchie, "Near-Threshold Fatigue Crack Propagation in Steels," *International Metals Reviews*, vol. 24 (5/6), 1979, pp. 205-230.

ⁱⁱ ASME *Journal of Engineering Materials and Technology* Best Paper Award, 1978.

ⁱⁱⁱ ASM Marcus A. Grossmann Award paper, 1980.

39. G. H. Aronson and R. O. Ritchie, "Optimization of the Electrical Potential Technique for Crack Growth Monitoring in Compact Test Pieces Using Finite Element Analysis," *ASTM Journal of Testing and Evaluation*, vol. 7 (4), July 1979, pp. 208-215.
40. R. O. Ritchie, W. L. Server, and R. A. Wullaert, "Fracture Toughness Predictions for Nuclear Pressure Vessel Steels," *Proceedings of the Third International Conference on Mechanical Behavior of Materials*, K. J. Miller and R. F. Smith, eds., Pergamon Press, New York, NY, 1979, vol. 3, pp. 489-500.
41. R. O. Ritchie, "Near-Threshold Fatigue Crack Growth in Low Alloy Pressure Vessel Steels," *Proceedings of Fourth Annual Conference on Materials for Coal Conversion and Utilization*, U.S. Department of Energy, Washington, D.C., 1979, pp. III 65-72 (Summary).
42. M. R. Mitchell, N. E. Paton, R. O. Ritchie, and N. Q. Nguyen, "Near-Threshold Fatigue Crack Propagation in Pipeline Steels in High Pressure Environments," *Proceedings of Department of Energy Chemical Energy Storage and Hydrogen Entry Systems Contract Review*, U.S. Department of Energy, Washington, D.C., Nov. 1979, pp. 172-175.
43. R. O. Ritchie, W. L. Server, and R. A. Wullaert, "Critical Fracture Stress and Fracture Strain Models for the Prediction of Lower and Upper Shelf Toughness in Nuclear Pressure Vessel Steels," *Metallurgical Transactions A*, vol. 10A (10), Oct. 1979, pp. 1557-1570.
44. S. Suresh, C. M. Moss, and R. O. Ritchie, "Hydrogen-Assisted Fatigue Crack Growth in 2¼Cr-1Mo Low Strength Steels," *Transactions of Japan Institute of Metals*, vol. 21, 1980, pp. 481-484.
45. W. L. Server, R. A. Wullaert, and R. O. Ritchie, "Direct and Predictive Techniques for Determining Radiation Embrittlement of Pressure Vessel Steels," in *Assuring Structural Integrity of Steel Reactor Pressure Vessels*, L. E. Steele and K. E. Stahlkopf, eds., Applied Science Publishers Ltd., Barking, U.K., 1980, pp. 177-186.
46. W. L. Server, R. A. Wullaert, and R. O. Ritchie, "On the Use of Side-Grooves in Estimating J_{Ic} Fracture Toughness with Charpy-Size Specimens," *Journal of Engineering Materials and Technology*, Transactions of ASME Series H, vol. 102 (2), April 1980, pp. 192-199.
47. R. O. Ritchie, S. Suresh, and C. M. Moss, "Near-Threshold Fatigue Crack Growth in 2¼Cr-1Mo Pressure Vessel Steel in Air and Hydrogen," *Journal of Engineering Materials and Technology*, Transactions of ASME Series H, vol. 102 (3), July 1980, pp. 293-299.
48. R. O. Ritchie, "On the Relationship between Sliding Wear and the Initiation and Growth of Fatigue Cracks in Ultrahigh Strength Steels," in *Fundamentals of Tribology*, N. P. Suh and N. Saka, eds., The M.I.T. Press, Cambridge, MA, 1980, pp. 127-134.
49. R. O. Ritchie, "The Application of Fracture Mechanics to Fatigue, Corrosion Fatigue and Hydrogen Embrittlement," in *Analytical and Experimental Fracture Mechanics*, G. C. Sih and M. Mirabile, eds., Sijthoff and Noordhoff, Holland, 1981, pp. 81-108.
50. ^{iv}S. Suresh, G. F. Zamiski, and R. O. Ritchie, "Oxide-Induced Crack Closure: An Explanation for Near-Threshold Corrosion Fatigue Crack Growth Behavior," *Metallurgical Transactions A*, vol. 12A (8), Aug. 1981, pp. 1435-1443.
51. G. R. Odette, R. O. Ritchie, P. McConnell, and W. L. Server, "An Evaluation of the Application of Fracture Mechanics Procedures to Fusion First Wall Structures," *Journal of Nuclear Materials*, vol. 103, 1981, pp. 149-154.
52. J. Toplosky and R. O. Ritchie, "On the Influence of Gaseous Hydrogen in Decelerating Fatigue Crack Growth Rates in Ultrahigh Strength Steels," *Scripta Metallurgica*, vol. 15 (8), Aug. 1981, pp. 905-908.
53. S. Suresh and R. O. Ritchie, "On the Influence of Fatigue Underloads on Cyclic Crack Growth at Low Stress Intensities," *Materials Science and Engineering*, vol. 51 (1), Nov. 1981, pp. 61-69.

^{iv} TMS-AIME Champion H. Mathewson Gold Medal Award paper, 1985.

54. S. Suresh and R. O. Ritchie, "Mechanisms of Environmentally-Assisted Fatigue Crack Growth in Low Strength Steels," in *Advances in Fracture Research, Proceedings of Fifth International Conference on Fracture*, Cannes, France, D. François, *et al.*, eds., Pergamon Press, Oxford and New York, 1981, pp. 1873-1880.
55. F. A. McClintock and R. O. Ritchie, "Modelling Low Cycle Torsional Fatigue Crack Growth under Variable Amplitude Loading," in *Mechanics of Fatigue*, T. Mura, ed., AMD-Vol. 47, American Society of Mechanical Engineers, New York, NY, 1981, pp. 1-9.
56. R. O. Ritchie, F. A. McClintock, H. Nayeb-Hashemi, and M. A. Ritter, "Mode III Fatigue Crack Propagation in Low Alloy Steels," *Metallurgical Transactions A*, vol. 13A (1), Jan. 1982, pp. 101-110.
57. S. Suresh, G. F. Zamiski, and R. O. Ritchie, "Fatigue Crack Propagation Behavior of 2¼Cr-1Mo Steels for Thick Wall Pressure Vessels," in *Application of 2¼Cr-1Mo Steel for Thick Wall Pressure Vessels*, ASTM STP 755, G. S. Sangdahl and M. Semchysen, eds., American Society for Testing and Materials, Philadelphia, 1982, PA, pp. 49-67.
58. E. K. Tschegg, R. O. Ritchie, and S. E. Stanzl, "Ultrasonic Methods for Determination of Near-Threshold Fatigue Crack Growth Rates," in *Fatigue Thresholds, First International Conference Proceedings*, Stockholm, June 1981, J. Bäcklund, A. Blom, and C. J. Beevers, eds., EMAS Ltd., Warley, U.K., vol. 1, 1982, pp. 99-112.
59. S. Suresh, D. M. Parks, and R. O. Ritchie, "Crack Tip Oxide Formation and its Influence on Fatigue Thresholds," in *Fatigue Thresholds, First International Conference Proceedings*, Stockholm, June 1981, J. Bäcklund, A. Blom, and C. J. Beevers, eds., EMAS Ltd., Warley, U.K., vol. 1, 1982, pp. 391-408.
60. R. O. Ritchie, "Environmental Effects on Near-Threshold Fatigue Crack Propagation in Steels: A Re-Assessment," in *Fatigue Thresholds, First International Conference Proceedings*, Stockholm, June 1981, J. Bäcklund, A. Blom, and C. J. Beevers, eds., EMAS Ltd., Warley, U.K., vol. 1, 1982, pp. 503-526.
61. M. Kurkela, G. Frankel, R. M. Latanision, S. Suresh, and R. O. Ritchie, "Influence of Plastic Deformation on Hydrogen Transport in 2¼Cr-1Mo Steel," *Scripta Metallurgica*, vol. 16 (4), April 1982, pp. 455-459.
62. R. O. Ritchie and S. Suresh, "Some Considerations on Fatigue Crack Closure at Near-Threshold Stress Intensities due to Fracture Surface Morphology," *Metallurgical Transactions A*, vol. 13A (5), May 1982, pp. 937-940.
63. M. A. Ritter and R. O. Ritchie, "On the Calibration, Optimization and Use of D.C. Electrical Potential Methods for Monitoring Mode III Crack Growth in Torsionally-Loaded Samples," *Fatigue of Engineering Materials & Structures*, vol. 5 (1), 1982, pp. 91-99.
64. S. Suresh and R. O. Ritchie, "Mechanistic Dissimilarities Between Environmentally-Influenced Fatigue Crack Propagation at Near-Threshold and Higher Growth Rates in Lower Strength Steels," *Metal Science*, vol. 16 (11), Nov. 1982, pp. 529-538.
65. J. F. McCarver and R. O. Ritchie, "Fatigue Crack Propagation Thresholds for Long and Short Cracks in René 95 Nickel-Base Superalloy," *Materials Science and Engineering*, vol. 55 (1), Aug. 1982, pp. 63-67.
66. S. Suresh and R. O. Ritchie, "A Geometric Model for Fatigue Crack Closure Induced by Fracture Surface Roughness," *Metallurgical Transactions A*, vol. 13A (9), Sept. 1982, pp. 1627-1631.
67. H. Nayeb-Hashemi, F. A. McClintock, and R. O. Ritchie, "Effects of Friction and High Torque on Fatigue Crack Propagation in Mode III," *Metallurgical Transactions A*, vol. 13A (12), Dec. 1982, pp. 2197-2204.
68. R. O. Ritchie and S. Suresh, "Effects of Crack Flank Oxide Debris and Fracture Surface Roughness on Near-Threshold Corrosion Fatigue," in *Atomistics of Fracture*, R. M. Latanision and J. R. Pickens, eds., Plenum Press, New York, NY, 1983, pp. 835-845.

69. R. O. Ritchie, S. Suresh, and P. K. Liaw, "A Comparison of Environmentally-Influenced Near-Threshold Fatigue Crack Growth Behavior in High and Lower Strength Steels at Conventional Frequencies," in *Ultrasonic Fatigue*, J. M. Wells, O. Buck, L. D. Roth and J. K. Tien, eds., TMS-AIME, Warrendale, PA, 1982, pp. 443-460.
70. S. Suresh, J. Toplosky, and R. O. Ritchie, "Environmentally-Affected Near-Threshold Fatigue Crack Growth in Steels," in *Fracture Mechanics 14th Symposium: Vol. 1, Theory and Analysis*, ASTM STP 791, J. C. Lewis and G. Sines, eds., American Society for Testing and Materials, Philadelphia, PA, 1983, pp. I329-I347.
71. R. O. Ritchie, "Why Ductile Fracture Mechanics?" *Journal of Engineering Materials and Technology*, Transactions of ASME Series H, vol. 105 (1), Jan. 1983, pp. 1-7.
72. R. O. Ritchie and S. Suresh, "Mechanics and Physics of the Growth of Small Cracks," in *Behavior of Short Cracks in Airframe Components, Proceedings of 55th Specialists Meeting of AGARD Structural and Materials Panel*, AGARD vol. CP328, North Atlantic Treaty Organization, AGARD, France, 1983, pp. 1.1-1.14.
73. W. J. Salesky, R. M. Fisher, R. O. Ritchie, and G. Thomas, "The Nature and Origin of Sliding Wear Debris from Steels," in *Wear of Materials 1983, Proceedings of the Third International Conference*, Reston VA, K. C. Ludema, ed., American Society of Mechanical Engineers, New York, NY, 1983, pp. 434-445.
74. H. Nayeb-Hashemi, F. A. McClintock, and R. O. Ritchie, "Micro-Mechanical Modelling of Mode III Fatigue Crack Growth in Rotor Steels," *International Journal of Fracture*, vol. 23 (3), Nov. 1983, pp. 163-185.
75. C. S. White, R. O. Ritchie, and D. M. Parks, "Ductile Growth of Part-Through Surface Cracks: Experiments and Analysis," in *Elastic-Plastic Fracture: Vol. 1, Inelastic Crack Analysis*, ASTM STP 803, C. F. Shih and J. P. Gudas, eds., American Society for Testing and Materials, Philadelphia, PA, 1983, pp. I384-I409.
76. E. K. Tschegg, R. O. Ritchie, and F. A. McClintock, "On the Influence of Rubbing Fracture Surfaces on Fatigue Crack Propagation in Mode III," *International Journal of Fatigue*, vol. 5 (1), Jan. 1983, pp. 29-35.
77. H. Nayeb-Hashemi, F. A. McClintock, and R. O. Ritchie, "Influences of Overloads and Block Loading Sequences on Mode III Fatigue Crack Propagation in A469 Rotor Steel," *Engineering Fracture Mechanics*, vol. 18 (4), 1983, pp. 736-783.
78. S. Suresh and R. O. Ritchie, "On the Influence of Environment on the Load Ratio Dependence of Fatigue Thresholds in Pressure Vessel Steel," *Engineering Fracture Mechanics*, vol. 18 (4), 1983, pp. 785-800.
79. R. O. Ritchie and S. Suresh, "The Fracture Mechanics Similitude Concept: Questions Concerning its Application to the Behavior of Short Fatigue Cracks," *Materials Science and Engineering*, vol. 57 (2), 1983, pp. L27-L30.
80. H. Nayeb-Hashemi, S. Suresh, and R. O. Ritchie, "On the Contrast between Mode I and Mode III Fatigue Crack Propagation under Variable Amplitude Loading Conditions," *Materials Science and Engineering*, vol. 59 (1), 1983, pp. L1-L5.
81. S. Suresh and R. O. Ritchie, "Some Considerations on the Modelling of Oxide-Induced Fatigue Crack Closure Using Solutions for a Rigid Wedge Inside a Linear Elastic Crack," *Scripta Metallurgica*, vol. 17 (4), April 1983, pp. 575-580.
82. R. O. Ritchie, "Thresholds for Fatigue Crack Propagation: Questions and Anomalies," in *Advances in Fracture Research '84, Proceedings of the Sixth International Conference on Fracture* (ICF-6), New Delhi, India, S. R. Valluri *et al.*, eds., Pergamon Press, Oxford, UK, vol. 1, 1984, pp. 235-260.

83. J. A. Wasynczuk, R. O. Ritchie, and G. Thomas, "Effects of Microstructure on Fatigue Crack Growth in Duplex Ferrite-Martensite Steels," *Materials Science and Engineering*, vol. 62, 1984, pp. 79-92.
84. J.-L. Tzou, S. Suresh, and R. O. Ritchie, "Fatigue Crack Propagation in Viscous Environments," in *Mechanical Behavior of Materials IV, Proceedings of Fourth International Conference (ICM-4)*, Stockholm, Sweden, J. Carlsson and N. G. Ohlson, eds., Pergamon Press, Oxford, U.K., vol. 2, 1984, pp. 711-717.
85. V. B. Dutta, S. Suresh, and R. O. Ritchie, "Fatigue Crack Propagation in Dual-Phase Steels: Effects of Ferritic-Martensitic Microstructures on Crack Path Morphology," *Metallurgical Transactions A*, vol. 15A (6), June 1984, pp. 1193-1207.
86. S. Suresh and R. O. Ritchie, "Near-Threshold Fatigue Crack Propagation: A Perspective on the Role of Crack Closure," in *Fatigue Crack Growth Threshold Concepts*, D. L. Davidson and S. Suresh, eds., TMS-AIME, Warrendale, PA, 1984, pp. 227-261.
87. E. R. Parker, R. O. Ritchie, J. A. Todd, and P. N. Spencer, "An Advanced 3Cr-Mo-Ni Steel for Hydrogen Service," in *Research on Chrome-Moly Steel*, R. A. Swift, ed., ASME Vol. MPC-21, American Society for Mechanical Engineers, New York, NY, 1984, pp. 109-116.
88. V. B. Dutta, S. Suresh, G. Thomas, and R. O. Ritchie, "Fatigue Resistance and Microstructure of Experimental Dual Phase Fe-2Si-0.1C Steel," in *Fracture Prevention in Energy and Transport Systems*, I. Le May, and S. Neves Monteiro, eds., EMAS Ltd., Warley, U.K., vol. 2, 1984, pp. 695-704.
89. E. Zaiken and R. O. Ritchie, "On the Location of Crack Closure and the Threshold Condition for Fatigue Crack Growth," *Scripta Metallurgica*, vol. 18 (8), Aug. 1984, pp. 847-850.
90. S. Suresh and R. O. Ritchie, "The Propagation of Short Fatigue Cracks," *International Metals Reviews*, vol. 29 (6), Dec. 1984, pp. 445-476.
91. R. O. Ritchie, E. R. Parker, P. N. Spencer, and J. A. Todd, "A New Series of Advanced 3Cr-Mo-Ni Steels for Thick Section Pressure Vessels in High Temperature/High Pressure Hydrogen Service," *Journal of Materials for Energy Systems*, vol. 6 (3), Dec. 1984, pp. 151-162.
92. R. P. Gangloff and R. O. Ritchie, "Environmental Effects Novel to the Propagation of Short Fatigue Cracks," in *Fundamentals of Deformation and Fracture, Eshelby Memorial Symposium*, B. A. Bilby, K. J. Miller and J. R. Willis, eds., Cambridge University Press, Cambridge, U.K., 1985, pp. 529-558.
93. J.-L. Tzou, S. Suresh, and R. O. Ritchie, "Fatigue Crack Propagation in Oil Environments - I. Crack Growth Behavior in Silicone and Paraffin Oils," *Acta Metallurgica*, vol. 33 (1), Jan. 1985, pp. 105-116.
94. J.-L. Tzou, C. H. Hsueh, A. G. Evans, and R. O. Ritchie, "Fatigue Crack Propagation in Oil Environments - II. A Model for Crack Closure Induced by Viscous Fluids," *Acta Metallurgica*, vol. 33 (1), Jan. 1985, pp. 117-127.
95. R. O. Ritchie and A. W. Thompson, "On Macroscopic and Microscopic Analyses for Crack Initiation and Crack Growth Toughness in Ductile Alloys," *Metallurgical Transactions A*, vol. 16A (2), Feb. 1985, pp. 233-248.
96. J.-L. Tzou and R. O. Ritchie, "Fatigue Crack Propagation in a Dual Phase Plain Carbon Steel," *Scripta Metallurgica*, vol. 19 (6), June 1985, pp. 751-755.
97. T. George, E. R. Parker, and R. O. Ritchie, "Susceptibility to Hydrogen Attack of a Thick-Section 3Cr-1Mo-1Ni Pressure-Vessel Steel: Role of Cooling Rate," *Materials Science and Technology*, vol. 1 (3), March 1985, pp. 198-208.
98. E. Zaiken and R. O. Ritchie, "Effects of Microstructure on Fatigue Crack Propagation and Crack Closure Behavior in Aluminum Alloy 7150," *Materials Science and Engineering*, vol. 70, 1985, pp. 151-160.

99. E. Zaiken and R. O. Ritchie, "On the Development of Crack Closure and the Threshold Condition for Short and Long Fatigue Cracks in 7150 Aluminum Alloy," *Metallurgical Transactions A*, vol. 16A (8), Aug. 1985, pp. 1467-1477.
100. R. D. Pendse and R. O. Ritchie, "A Study of Fatigue Crack Propagation in Prior Hydrogen Attacked Pressure Vessel Steels," *Metallurgical Transactions A*, vol. 16A (8), Aug. 1985, pp. 1491-1501.
101. E. Zaiken and R. O. Ritchie, "On the Role of Compression Overloads in Influencing Crack Closure and the Threshold Condition for Fatigue Crack Growth in 7150 Aluminum Alloy," *Engineering Fracture Mechanics*, vol. 22 (1), 1985, pp. 35-48.
102. R. O. Ritchie, "Micro-Fracture Mechanics", in *Metals Handbook, 9th Edition: Volume 8, Mechanical Testing*, American Society for Metals, Metals Park, OH, 1985, pp. 465-468.
103. P. Donehoo, W. Yu, and R. O. Ritchie, "On the Growth of Cracks at the Fatigue Threshold Following Compression Overloads: Role of Load Ratio," *Materials Science and Engineering*, vol. 74 (1), 1985, pp. 11-17.
104. R. O. Ritchie, "Near-Threshold Fatigue: An Overview of the Role of Microstructure and Environment," in *Fatigue '84, Proceedings of the Second International Conference on Fatigue and Fatigue Thresholds*, C. J. Beevers, ed., EMAS Ltd., Warley, U.K., vol. 3, 1985, pp. 1833-1863.
105. D. A. Utah, W. H. Cullen, R. O. Ritchie, R. H. Stentz, and R. Williams, "Fatigue Crack Propagation", in *Metals Handbook, 9th Edition: Volume 8, Mechanical Testing*, American Society for Metals, Metals Park, OH, 1985, pp. 376-402.
106. R. O. Ritchie, "Slow Crack Growth: Macroscopic and Microscopic Aspects," in *Fracture and Fracture Mechanics: Case Studies*, R. B. Tait and G. G. Garrett, eds., Pergamon Press, Oxford, U.K., 1985, pp. 93-124.
107. R. O. Ritchie, F. A. McClintock, E. K. Tscheegg, and H. Nayeb-Hashemi, "Mode III Fatigue Crack Growth under Combined Torsional and Axial Loading," in *Multiaxial Fatigue*, ASTM STP 853, K. J. Miller and M. W. Brown, eds., American Society for Testing and Materials, Philadelphia, PA, 1985, pp. 203-227.
108. R. O. Ritchie and P. Lubock, "Fatigue Life Estimation Procedures for the Endurance of a Cardiac Valve Prosthesis: Stress/Life and Damage-Tolerant Analyses," *Journal of Biomechanical Engineering*, Transactions of ASME, vol. 108, May 1986, pp. 153-160.
109. Tsann Lin, A. G. Evans, and R. O. Ritchie, "A Statistical Model of Brittle Fracture by Transgranular Cleavage," *Journal of Mechanics and Physics of Solids*, vol. 34 (5), 1986, pp. 477-497.
110. K. T. Venkateswara Rao, W. Yu, and R. O. Ritchie, "On the Growth of Small Fatigue Cracks in Aluminum-Lithium Alloy 2090", *Scripta Metallurgica*, vol. 20 (10), Oct. 1986, pp. 1459-1465.
111. Tsann Lin, A. G. Evans, and R. O. Ritchie, "Statistical Analysis of Cleavage Fracture ahead of Sharp Cracks and Rounded Notches," *Acta Metallurgica*, vol. 34 (11), Nov. 1986, pp. 2205-2216.
112. R. O. Ritchie, W. W. Gerberich, and S. D. Antolovich, "Fundamentals of Fracture and Fatigue: A Basis or Alloy Design," in *Mechanical Properties and Phase Transformations in Engineering Materials, Proceedings of the E. R. Parker Symposium*, New Orleans, March 1986, S. D. Antolovich, R. O. Ritchie, and W. W. Gerberich, eds., TMS-AIME, Warrendale, PA, 1986, pp. 99-124.
113. R. O. Ritchie and J. Lankford, "Small Fatigue Cracks: A Statement of the Problem and Potential Solutions", *Materials Science and Engineering*, vol. 84, 1986, pp. 11-16.
114. R. O. Ritchie, "Ductile Fracture: Micromechanics", in *Encyclopedia of Materials Science and Engineering*, M. B. Bever, ed., Pergamon Press, Oxford, 1986, pp. 1243-1252.
115. R. O. Ritchie, "Fatigue Crack Growth: Macroscopic Aspects," in *Encyclopedia of Materials Science and Engineering*, M. B. Bever, ed., Pergamon Press, Oxford, U.K., 1986, pp. 1642-1650.

116. R. O. Ritchie, "Fatigue Crack Growth: Mechanistic Aspects," in *Encyclopedia of Materials Science and Engineering*, M. B. Bever, ed., Pergamon Press, Oxford, U.K., 1986, pp. 1650-1666.
117. R. H. Dauskardt and R. O. Ritchie, "Fatigue Crack Propagation Behavior in Pressure Vessel Steels for High Pressure Hydrogen Service", in *High Strength Steels for Pressure Containment*, E. Nisbett, ed., ASME PVP Vol. 114/MPC Vol. 27, American Society for Mechanical Engineers, New York, NY, 1986, pp. 17-28.
118. R. O. Ritchie and W. Yu, "Short Crack Effects in Fatigue: A Consequence of Crack Tip Shielding", in *Small Fatigue Cracks*, R. O. Ritchie and J. Lankford, eds., TMS-AIME, Warrendale, PA, 1986, pp. 167-189.
119. J. Glazer, S. L. Verzasioni, E. N. C. Dalder, W. Yu, R. A. Emigh, R. O. Ritchie, and J. W. Morris, Jr., "Cryogenic Mechanical Properties of Al-Cu-Li-Zr Alloy 2090," in *Advances in Cryogenic Engineering*, vol. 32, 1986, pp. 397-404.
120. R. D. Pendse and R. O. Ritchie, "Influence of High Pressure Hydrogen Pre-Exposure on Crack Growth under Monotonic and Cyclic Loading," in *Modeling Environmental Effects on Crack Growth Processes*, R. H. Jones and W. W. Gerberich, eds., TMS-AIME, Warrendale, PA, 1986, pp. 321-342.
121. W. Yu and R. O. Ritchie, "Fatigue Crack Propagation in 2090 Aluminum-Lithium Alloy: Effect of Compression Overload Cycles", *Journal of Engineering Materials and Technology*, Transactions of ASME, Series H, vol. 109 (1), Jan. 1987, pp. 81-85.
122. R. O. Ritchie, W. W. Gerberich, and J. H. Underwood, "Fracture and Fatigue", in *Encyclopedia of Physical Science and Technology*, R. A. Meyers, ed., Academic Press, San Diego, CA; First edition, vol. 5, 1987, pp. 594-613; Second edition, vol. 6, 1992, pp. 693-712.
123. Tsann Lin, A. G. Evans, and R. O. Ritchie, "Stochastic Modelling of the Independent Roles of Particle Size and Grain Size in Transgranular Cleavage Fracture", *Metallurgical Transactions A*, vol. 18A (5), April 1987, pp. 641-651.
124. R. O. Ritchie, "A Comparison of Fatigue Crack Propagation in Modes I and III," in *Fracture Mechanics 18th Symposium*, ASTM STP 945, R. P. Read and D. T. Reed, eds., American Society for Testing and Materials, Philadelphia, PA, 1987, pp. 821-842.
125. K. T. Venkateswara Rao, W. Yu, and R. O. Ritchie, "On the Role of Crack Tip Shielding in Influencing the Behavior of Long and Small Fatigue Cracks in Aluminum-Lithium Alloy 2090," in *Fatigue '87, Proceedings of the Third International Conference on Fatigue and Fatigue Thresholds*, R. O. Ritchie and E. A. Starke, eds., EMAS Ltd., Warley, U.K., vol. 1, 1987, pp. 291-301.
126. Jianku Shang, J.-L. Tzou, and R. O. Ritchie, "Role of Crack Tip Shielding in the Initiation and Growth of Long and Small Fatigue Cracks in Composite Microstructures", *Metallurgical Transactions A*, vol. 18A (9), Sept. 1987, pp. 1613-1627.
127. R. H. Dauskardt, R. D. Pendse, and R. O. Ritchie, "Effects of Pre-Existing Grain Boundary Microvoid Distributions on Fracture Toughness and Fatigue Crack Growth in Low Alloy Steel," *Acta Metallurgica*, vol. 35 (9), Sept. 1987, pp. 2227-2242.
128. R. H. Dauskardt, W. Yu, and R. O. Ritchie, "Fatigue Crack Propagation in Transformation-Toughened Zirconia Ceramic," *Journal of American Ceramic Society*, vol. 70 (10), Oct. 1987, pp. C248-252.
129. R. W. Hertzberg, W. A. Herman, and R. O. Ritchie, "Use of a Constant K_{max} Test Procedure to Predict Small Crack Growth Behavior in 2090-T8E41 Aluminum-Lithium Alloy," *Scripta Metallurgica*, vol. 21 (11), Nov. 1987, pp. 1541-1546.
130. Tae Sung Oh, R. M. Cannon, and R. O. Ritchie, "Subcritical Crack Growth along Ceramic-Metal Interfaces," *Journal of American Ceramic Society*, vol. 70 (12), Dec. 1987, pp. C352-355.

131. R. O. Ritchie, W. Yu, A. F. Blom, and D. K. Holm, "An Analysis of Crack Tip Shielding in Aluminum Alloy 2124: A Comparison of Large, Small, Through-Thickness and Surface Fatigue Cracks," *Fatigue & Fracture of Engineering Materials & Structures*, vol. 10 (5), 1987, pp. 343-362.
132. R. O. Ritchie, E. Zaiken, and A. F. Blom, "Is the Concept of a Fatigue Threshold Meaningful in the Presence of Compression Cycles?" in *Basic Questions in Fatigue, Vol. I*, ASTM STP 924, J. T. Fong and R. J. Fields, eds., American Society for Testing and Materials, Philadelphia, PA, 1988, pp. 337-356.
133. JianKu Shang and R. O. Ritchie, "On the Development of Unusually High Fatigue Crack Propagation Resistance in Steels: Crack Tip Shielding in Duplex Microstructures," in *Mechanical Behaviour of Materials - V, Proceedings of Fifth International Conference (ICM-5)*, M. G. Yan, S. H. Zhang, and Z. M. Zheng, eds., Beijing, China, Pergamon Press, Oxford, U.K., 1987, pp. 511-519.
134. K. T. Venkateswara Rao, H. F. Hayashigatani, W. Yu, and R. O. Ritchie, "On the Fracture Toughness of Aluminum-Lithium Alloy 2090-T8E41 at Ambient and Cryogenic Temperatures," *Scripta Metallurgica*, vol. 22 (1), Jan. 1988, pp. 93-98.
135. R. O. Ritchie, "Crack Tip Shielding in Fatigue", in *Mechanical Behaviour of Materials - V, Proceedings of Fifth International Conference (ICM-5)*, M. G. Yan, S. H. Zhang, and Z. M. Zheng, eds., Beijing, China, Pergamon Press, Oxford, U.K., 1988, vol. 2, pp. 1399-1417.
136. K. T. Venkateswara Rao, W. Yu, and R. O. Ritchie, "Fatigue Crack Propagation in Aluminum-Lithium Alloy 2090: Part I. Long Crack Behavior," *Metallurgical Transactions A*, vol. 19A (3), March 1988, pp. 549-561.
137. K. T. Venkateswara Rao, W. Yu, and R. O. Ritchie, "Fatigue Crack Propagation in Aluminum-Lithium Alloy 2090: Part II. Small Crack Behavior," *Metallurgical Transactions A*, vol. 19A (3), March 1988, pp. 563-569.
138. C. M. Ward-Close and R. O. Ritchie, "On the Role of Crack Closure Mechanisms in Influencing Fatigue Crack Growth Following Tensile Overloads in Titanium Alloys: Near-Threshold vs. Higher ΔK Behavior," in *Mechanics of Fatigue Crack Closure*, ASTM STP 982, J. C. Newman, Jr. and W. Elber, eds., American Society for Testing and Materials, Philadelphia, PA, 1988, pp. 93-111.
139. R. O. Ritchie, W. Yu, D. K. Holm, and A. F. Blom, "Development of Fatigue Crack Closure with the Extension of Long and Short Flaws in Aluminum Alloy 2124: A Comparison of Experimental and Numerical Results," in *Mechanics of Fatigue Crack Closure*, ASTM STP 982, J. C. Newman, Jr. and W. Elber, eds., American Society for Testing and Materials, Philadelphia, PA, 1988, pp. 300-316.
140. Tsann Lin and R. O. Ritchie, "On the Effect of Sampling Volume on the Microscopic Cleavage Fracture Stress," *Engineering Fracture Mechanics*, vol. 29 (6), 1988, pp. 697-703.
141. T. S. Oh, R. M. Cannon, J. Rödel, A. M. Glaeser, and R. O. Ritchie, "Effects of Near Interfacial Microstructures on Toughness and Subcritical Crack Growth in Ceramic/Metal Systems," in *Interfaces in Polymers, Ceramics, and Metal-Matrix Composites, Proceedings of the Second International Conference on Composites Interfaces (ICCI- II)*, H. Ishida, ed., Elsevier Science, New York, NY, 1988, pp. 567- 581.
142. K. T. Venkateswara Rao and R. O. Ritchie, "Effect of Prolonged High-Temperature Exposure on the Fatigue and Fracture Behavior of Aluminum-Lithium Alloy 2090," *Materials Science and Engineering*, vol. 100, April 1988, pp. 23-30.
143. K. T. Venkateswara Rao, W. Yu, and R. O. Ritchie, "On the Behavior of Small Fatigue Cracks in Commercial Aluminum-Lithium Alloys," *Engineering Fracture Mechanics*, vol. 31 (4), 1988, pp. 623-635.

^v ASTM E-9 Award for Best Presented Paper on Fatigue, 1986.

144. Tae Sung Oh, J. Rödel, R. M. Cannon, and R. O. Ritchie, "Ceramic/Metal Interfacial Crack Growth: Toughening by Controlled Microcracks and Interfacial Geometries," *Acta Metallurgica*, vol. 36 (8), August 1988, pp. 2083-2093.
145. Jian Ku Shang, W. Yu, and R. O. Ritchie, "Role of Silicon Carbide Particles in Fatigue Crack Growth in SiC-Particulate-Reinforced Aluminum Alloy Composites," *Materials Science and Engineering*, vol. 102A, 1988, pp. 181-192.
146. R. O. Ritchie, "Mechanisms of Fatigue Crack Propagation in Metals, Ceramics and Composites: Role of Crack-Tip Shielding," *Materials Science and Engineering*, vol. 103, 1988, pp. 15-28.
147. K. T. Venkateswara Rao and R. O. Ritchie, "Mechanisms for the Retardation of Fatigue Cracks Following Single Tensile Overloads: Behavior in Aluminum-Lithium Alloys," *Acta Metallurgica*, vol. 36 (10), October 1988, pp. 2849-2862.
148. C. M. Suh, R. O. Ritchie, and Y. G. Kang, "Fatigue Crack Growth Behavior of the Short Surface Cracks in 2¼Cr-1Mo Steel," in *Proceedings of the VI International Congress on Experimental Mechanics*, Society for Experimental Mechanics Publications, Bethel, CT, 1988.
149. Jian Ku Shang and R. O. Ritchie, "Crack-Tip Shielding in Metal-Matrix Composites: Modelling of Crack Bridging by Uncracked Ligaments," in *High Temperature/High Performance Composites*, MRS Symposium Proceedings, F. D. Lemkey, A. G. Evans, S. G. Fishman, and J. R. Strife, eds., vol. 120, Materials Research Society, Pittsburgh, PA, 1988, pp. 81-87.
150. K. T. Venkateswara Rao and R. O. Ritchie, "Micromechanisms of Transient Fatigue Crack Growth Behavior in Aluminum-Lithium Alloys Following Single Tensile Overloads," in *Fatigue Crack Growth under Variable Amplitude Loading*, Proceedings of Third International Spring Meeting of Société Française de Métallurgie, J. Petit, ed., Elsevier, Barking, U.K., 1988, pp. 134-145.
151. D. K. Veirs, G. M. Rosenblatt, R. H. Dauskardt, and R. O. Ritchie, "Two-Dimensional Spatially Resolved Raman Spectroscopy of Solid Materials," in *Microbeam Analysis-1988*, D. E. Newbury, ed., San Francisco Press, CA, 1988, pp. 179-181.
152. K. T. Venkateswara Rao, W. Yu, and R. O. Ritchie, "Mechanisms of Fatigue Crack Propagation in Commercial Aluminum-Lithium Alloys," in *Aluminum-Lithium Alloys: Design, Development and Application Update*, Proceedings of 1987 Aluminum-Lithium Symposium, Los Angeles, R. J. Kar, S. P. Agrawal and W. E. Quist, eds., ASM International, Metals Park, OH, 1988, pp. 173-186.
153. C. M. Ward-Close and R. O. Ritchie, "Variable Amplitude Fatigue Crack Growth in Ti-4Al-4Mo-2Sn-0.5Si (IMI 550)," in *Proceedings of the Sixth World Conference on Titanium*, Cannes, P. Lacombe, R. Tricot, and G. Béranger, eds., Société Française de Métallurgie, France, 1988, vol. 1, pp. 241-246, Pub Les Edition de Physique, 1989.
154. J.-K. Shang and R. O. Ritchie, "Mechanisms Associated with Near-Threshold Fatigue-Crack Propagation in SiC-Particulate-Reinforced Aluminum Composites," in *Proceedings of the Seventh International Conference on Composite Materials (ICCM-7)*, Beijing, China, 1989.
155. R. H. Dauskardt, D. B. Marshall, and R. O. Ritchie, "Cyclic Fatigue-Crack Propagation in Ceramics: Behavior in Overaged and Partially-Stabilized MgO-Zirconia," in Structural Ceramics/Fracture Mechanics, *MRS International Meeting on Advanced Materials*, Proceedings, Y. Hamano, O. Kamigaito, T. Kishi, and M. Sakai, eds., Materials Research Society, Pittsburgh, PA, vol. 5, 1989, pp. 543-550.
156. T. S. Oh, R. M. Cannon, and R. O. Ritchie, "On Optimizing the Toughening of Ceramic/Metal Interfaces using Implanted Microcracks," in *Metal-Ceramic Joints*, MRS International Meeting on Advanced Materials, Proceedings, N. Iwamoto and T. Suga, eds., Materials Research Society, Pittsburgh, PA, vol. 8, 1989, pp. 105-112.

157. R. O. Ritchie, W. Yu, and R. J. Bucci, "Fatigue Crack Propagation in ARALL Laminates: Measurement of the Effect of Crack-Tip Shielding from Crack Bridging," *Engineering Fracture Mechanics*, vol. 32 (3), 1989, pp. 361-377.
158. R. H. Dauskardt, T. W. Duerig, and R. O. Ritchie, "Effects of *In Situ* Phase Transformation on Fatigue-Crack Propagation in Titanium-Nickel Shape-Memory Alloys," in *Shape Memory Materials*, MRS International Meeting on Advanced Materials, Proceedings, K. Otsuka and K. Shimizu, eds., Materials Research Society, Pittsburgh, PA, vol. 9, 1989, pp. 243-249.
159. T. S. Oh, R. M. Cannon, and R. O. Ritchie, "Tailored Microstructures to Control Interfacial Toughness," in *Thin Films: Stresses and Mechanical Properties*, MRS Symposium Proceedings, J. C. Bravman, W. D. Nix, D. M. Barnett, and D. A. Smith, eds., Materials Research Society, Pittsburgh, PA, vol. 130, 1989, pp. 219-224.
160. C. M. Ward-Close, A. F. Blom, and R. O. Ritchie, "Mechanisms Associated with Transient Fatigue Crack Growth during Variable-Amplitude Loading: An Experimental and Numerical Study," *Engineering Fracture Mechanics*, vol. 32 (4), 1989, pp. 613-638.
161. K. T. Venkateswara Rao, R. S. Piascik, R. P. Gangloff, and R. O. Ritchie, "Fatigue-Crack Propagation in Aluminum-Lithium Alloys: An Overview," in *Aluminum-Lithium Alloys*, Proceedings of the Fifth International Aluminum-Lithium Conference, T. H. Sanders and E. A. Starke, eds., MCEP Ltd., Edgbaston, U.K., vol. 2, 1989, pp. 955-971.
162. K. T. Venkateswara Rao and R. O. Ritchie, "Influence of Extrinsic Crack Deflection and Delamination Mechanisms on the Cryogenic Toughness of Aluminum-Lithium Alloy 2090: Behavior in Plate (T81) vs. Sheet (T83) Material," in *Aluminum-Lithium Alloys*, Proceedings of the Fifth International Aluminum-Lithium Conference, T. H. Sanders and E. A. Starke, eds., MCEP Ltd., Edgbaston, U.K., vol. 3, 1989, pp. 1501-1512.
163. R. O. Ritchie, W. Yu, A. F. Blom, and D. K. Holm, "Reply to Discussion of An Analysis of Crack Tip Shielding in Aluminum Alloy 2124: A Comparison of Large, Small, Through-Thickness and Surface Cracks," *Fatigue & Fracture of Engineering Materials & Structures*, vol.12 (1), 1989, pp. 73-75 (letter).
164. P. N. Spencer, R. H. Dauskardt, E. R. Parker, and R. O. Ritchie, "Fracture-Toughness, Fatigue-Crack Propagation and Creep-Rupture Behavior in Thick-Section Weldments of 3Cr-Mo Pressure-Vessel Steels Developed for High-Temperature/High-Pressure Hydrogen Service," *High Temperature Technology*, vol. 7 (1), Feb. 1989, pp. 17-26.
165. K. T. Venkateswara Rao, W. Yu, and R. O. Ritchie, "Cryogenic Toughness of Commercial Aluminum-Lithium Alloys: Role of Delamination Toughening," *Metallurgical Transactions A*, vol. 20A (3), March 1989, pp. 485-497.
166. Jian Ku Shang and R. O. Ritchie, "Crack Bridging by Uncracked Ligaments during Fatigue-Crack Growth in SiC-Reinforced Aluminum-Alloy Composites," *Metallurgical Transactions A*, vol. 20A (5), May 1989, pp. 897-908.
167. K. T. Venkateswara Rao and R. O. Ritchie, "Fracture-Toughness Behavior of 2090-T83 Aluminum-Lithium Alloy Sheet at Ambient and Cryogenic Temperatures," *Scripta Metallurgica*, vol. 23 (7), July 1989, pp. 1129-1134.
168. R. H. Dauskardt, D. K. Veirs, and R. O. Ritchie, "Spatially-Resolved Raman Spectroscopy of Transformed Zones in MgO-Partially-Stabilized Zirconia," *Journal of American Ceramic Society*, vol. 72 (7), July 1989, pp. 1124-1130.
169. JianKu Shang and R. O. Ritchie, "On the Particle-Size Dependence of Fatigue-Crack Propagation Thresholds in SiC-Particulate-Reinforced Aluminum-Alloy Composites: Role of Crack Closure and Crack Trapping," *Acta Metallurgica*, vol. 37 (8), Aug. 1989, pp. 2267-2278.
170. K. T. Venkateswara Rao and R. O. Ritchie, "Mechanical Properties of Al-Li Alloys. Part I: Fracture Toughness and Microstructure," *Materials Science and Technology*, vol. 5 (9), Sept. 1989, pp. 882-895.

171. R. H. Dauskardt and R. O. Ritchie, "Cyclic Fatigue-Crack Growth Behavior in Ceramics," *Closed Loop*, vol.17, 1989, pp. 7-17.
172. K. T. Venkateswara Rao and R. O. Ritchie, "Mechanical Properties of Al-Li Alloys. Part II: Fatigue-Crack Propagation," *Materials Science and Technology*, vol. 5 (9), Sept. 1989, pp. 896-907.
173. Chang Min Suh, R. O. Ritchie, and Young Goo Kang, "Growth Behavior of Short Surface Cracks in 2¼Cr-1Mo Steel," *Korean Society of Mechanical Engineers Journal*, vol. 3 (2), Nov. 1989, pp. 78-85.
174. R. H. Dauskardt, F. Haubensak, and R. O. Ritchie, "On the Interpretation of the Fractal Character of Fracture Surfaces," *Acta Metallurgica et Materialia*, vol. 38 (2), Feb. 1990, pp. 143-159.
175. R. H. Dauskardt, D. B. Marshall, and R. O. Ritchie, "Cyclic Fatigue-Crack Propagation in Mg-PSZ Ceramics," *Journal of American Ceramic Society*, vol. 73 (4), April 1990, pp. 893-903.
176. R. O. Ritchie, R. H. Dauskardt, W. Yu, and A. M. Brendzel, "Cyclic Fatigue-Crack Propagation, Stress-Corrosion and Fracture-Toughness Behavior in Pyrolytic Carbon-Coated Graphite for Prosthetic Heart Valve Applications," *Journal of Biomedical Materials Research*, vol. 24 (2), Feb. 1990, pp. 189-206.
177. K. T. Venkateswara Rao and R. O. Ritchie, "Fatigue-Crack Propagation in Advanced Aerospace Materials: Aluminum-Lithium Alloys," in *Advances in Fracture Research, Proceedings of the Seventh International Conference on Fracture (ICF-7)*, Houston, TX, K. Salama, K. Ravi-Chandar, D. M. R. Taplin, and P. Rama Rao, eds., Pergamon Press, Oxford, U.K., vol. 6, 1990, pp. 3787-3816.
178. E. Y. Luh, R. H. Dauskardt, and R. O. Ritchie, "Cyclic Fatigue-Crack Growth Behavior of Short Cracks in a SiC-Reinforced LAS Glass-Ceramic Composite," *Journal of Materials Science Letters*, vol. 9 (6), June 1990, pp. 719-725.
179. D. B. Marshall, M. C. Shaw, R. H. Dauskardt, R. O. Ritchie, M. Readey, and A. H. Heuer, "Crack-Tip Transformation Zones in Toughened Zirconia," *Journal of American Ceramic Society*, vol. 73 (9), Sept. 1990, pp. 2659-2666.
180. L. H. Edelson and R. O. Ritchie, "Microstructural Characterization of α_2 +B2 Titanium Aluminide Intermetallic (Super- α_2) using Transmission Electron Microscopy," *Materials Science and Engineering A*, vol. 130A (2), Dec. 1990, pp. 193-203.
181. K. T. Venkateswara Rao and R. O. Ritchie, "Mechanisms Influencing the Cryogenic Fracture-Toughness Behavior of Aluminum-Lithium Alloys," *Acta Metallurgica et Materialia*, vol. 38 (11), 1990, pp. 2309-2326.
182. A. A. Steffen, R. H. Dauskardt, and R. O. Ritchie, "Cyclic Fatigue-Crack Propagation in Ceramics: Long and Small Crack Behavior," in *Fatigue '90, Proceedings of the Fourth International Conference on Fatigue*, H. Kitagawa and T. Tanaka, eds., MCEP Ltd., Edgbaston, U.K., vol. 2, 1990, pp. 745-752.
183. K. T. Venkateswara Rao, R. J. Bucci, and R. O. Ritchie, "On the Micromechanisms of Fatigue-Crack Propagation in Aluminum-Lithium Alloys: Sheet vs. Plate Material," in *Fatigue '90, Proceedings of the Fourth International Conference on Fatigue*, H. Kitagawa and T. Tanaka, eds., MCEP Ltd., Edgbaston, U.K., vol. 2, 1990, pp. 936-970.
184. R. O. Ritchie and R. H. Dauskardt, "Cyclic Fatigue-Crack Propagation Behavior in Pyrolytic Carbon-Coated Graphites for Prosthetic Heart-Valve Devices," in *Fatigue '90, Proceedings of the Fourth International Conference on Fatigue*, H. Kitagawa and T. Tanaka, eds., MCEP Ltd., Edgbaston, U.K., vol. 2, 1990, pp. 819-826.
185. R. H. Dauskardt, W. C. Carter, D. K. Veirs, and R. O. Ritchie, "Transient Subcritical Crack-Growth Behavior in Transformation-Toughened Ceramics," *Acta Metallurgica et Materialia*, vol. 38 (11), 1990, pp. 2327-2336.

186. J.-K. Shang and R. O. Ritchie, "Monotonic and Cyclic Crack Growth in a TiC Particulate-Reinforced Ti-6Al-4V Metal-Matrix Composite," *Scripta Metallurgica et Materialia*, vol. 24 (9), Sept. 1990, pp. 1691-1694.
187. K. T. Venkateswara Rao and R. O. Ritchie, "Fatigue Crack Propagation and Cryogenic Fracture Toughness Behavior in Powder Metallurgy Aluminum-Lithium Alloys," *Metallurgical Transactions A*, vol. 22A (1), Jan. 1991, pp. 191-202.
188. K. T. Venkateswara Rao, N. J. Kim, P. P. Pizzo, and R. O. Ritchie, "Fatigue-Crack Propagation in Aluminum-Lithium Alloys Processed by Powder and Ingot Metallurgy," in *Advanced Aluminium and Magnesium Alloys, Proceedings of the International Conference*, T. Khan and G. Effenberg, eds., ASM International, Metals Park, Ohio, 1991, pp. 153-163.
189. Jian Ku Shang and R. O. Ritchie, "Fatigue of Discontinuously-Reinforced Metal-Matrix Composites," in *Treatise on Materials Science and Technology, Volume 33: Metal Matrix Composites: Mechanisms and Properties*, R. K. Everett and R. J. Arsenault, eds., Academic Press, Boston, MA, 1991, pp. 255-285.
190. K. T. Venkateswara Rao and R. O. Ritchie, "Development of Microstructures with Improved Cryogenic Toughness Through Variations in Stress State: Aluminum-Lithium Alloys," in *Alloy Phase Stability and Design, MRS Symposium Proceedings*, G. M. Stocks, D. P. Pope, and A. F. Giamei, eds., Materials Research Society, Pittsburgh, PA, vol. 186, 1991, pp. 421-426.
191. A. A. Steffen, R. H. Dauskardt, and R. O. Ritchie, "Cyclic Fatigue Life and Crack-Growth Behavior of Microstructurally-Small Cracks in Magnesia-Partially-Stabilized Zirconia Ceramics," *Journal of the American Ceramic Society*, vol. 74 (6), June 1991, pp. 1259-1268.
192. K. T. Venkateswara Rao, R. J. Bucci, K. V. Jata, and R. O. Ritchie, "A Comparison of Fatigue-Crack Propagation Behavior in Sheet and Plate Aluminum-Lithium Alloys," *Materials Science and Engineering A*, vol. 141A (1), July 1991, pp. 39-48.
193. R. H. Dauskardt and R. O. Ritchie, "Cyclic Fatigue-Crack Propagation in Ceramics and Ceramic Composites," in *Mechanical Behaviour of Materials - VI, Proceedings of the Sixth International Conference on the Mechanical Behaviour of Materials (ICM-6)*, M. Jono and T. Inoue, eds., Pergamon Press, Oxford, U.K., vol. 2, 1991, pp. 325-332.
194. R. M. Cannon, B. J. Dalgleish, R. H. Dauskardt, T. S. Oh, and R. O. Ritchie, "Cyclic Fatigue-Crack Propagation along Ceramic/Metal Interfaces," *Acta Metallurgica et Materialia*, vol. 39 (9), Sept. 1991, pp. 2145-2156.
195. R. O. Ritchie and R. H. Dauskardt, "Cyclic Fatigue of Ceramics: A Fracture Mechanics Approach to Subcritical Crack Growth and Life Prediction," *Journal of the Ceramic Society of Japan*, vol. 99 (10), Oct. 1991, pp. 1047-1062.
196. R. H. Dauskardt and R. O. Ritchie, "Cyclic Fatigue of Ceramics," in *Fatigue of Advanced Materials*, R. O. Ritchie, R. H. Dauskardt and B. N. Cox, eds., MCEP Ltd., Edgbaston, U.K., 1991, pp. 133-151.
197. K. T. Venkateswara Rao, G. R. Odette and R. O. Ritchie, "On the Fatigue and Fracture Resistance of Ductile-Phase Toughened Intermetallic-Matrix Composites: Behavior in β -TiNb/ γ -TiAl," in *Fatigue of Advanced Materials*, R. O. Ritchie, R. H. Dauskardt and B. N. Cox, eds., MCEP Ltd., Edgbaston, U.K., 1991, pp. 429-436.
198. R. M. Cannon, B. J. Dalgleish, R. H. Dauskardt, R. M. Fisher, T. S. Oh, and R. O. Ritchie, "Ceramic/Metal Interfaces: Monotonic and Cyclic Fatigue Resistance," in *Fatigue of Advanced Materials*, R. O. Ritchie, R. H. Dauskardt and B. N. Cox, eds., MCEP Ltd., Edgbaston, U.K., 1991, pp. 459-482.
199. K. T. Venkateswara Rao and R. O. Ritchie, "Fatigue of Aluminum-Lithium Alloys," *International Materials Reviews*, vol. 37 (4), 1992, pp. 153-185.

200. R. O. Ritchie, R. H. Dauskardt, and F. J. Pennisi, "On the Fractography of Overload, Stress Corrosion and Cyclic Fatigue Failures in Pyrolytic-Carbon Materials used in Prosthetic Heart-Valve Devices," *Journal of Biomedical Materials Research*, vol. 26 (1), Jan. 1992, pp. 69-76.
201. K. T. Venkateswara Rao, G. R. Odette, and R. O. Ritchie, "On the Contrasting Role of Ductile-Phase Reinforcements in the Fracture Toughness and Fatigue-Crack Propagation Resistance of TiNb/ γ -TiAl Intermetallic-Matrix Composites," *Acta Metallurgica et Materialia*, vol. 40(2), 1992, pp. 353-361.
202. A. A. Steffen, R. O. Ritchie, and R. H. Dauskardt, "Small-Crack Behavior and Safety-Critical Design Criteria for Cyclic Fatigue of Mg-PSZ Ceramics," *Cyclic Deformation, Fracture and Nondestructive Evaluation of Advanced Materials*, ASTM STP 1157, M. R. Mitchell and O. Buck, eds., American Society for Testing and Materials, Philadelphia, PA, 1992, pp. 69-81.
203. R. H. Dauskardt, M. R. James, J. R. Porter, and R.O. Ritchie, "Cyclic Fatigue-Crack Growth in SiC-Whisker-Reinforced Alumina Ceramic Composite: Long and Small-Crack Behavior," *Journal of the American Ceramic Society*, vol. 75(4), April 1992, pp. 759-771.
204. K. T. Venkateswara Rao, W. O. Soboyejo, and R. O. Ritchie, "Ductile-Phase Toughening and Fatigue-Crack Growth in Nb-Reinforced Molybdenum Disilicide Intermetallic Composites," *Metallurgical Transactions A*, vol. 23A (8), August 1992, pp. 2249-2257.
205. K. T. Venkateswara Rao and R. O. Ritchie, "Fatigue-Crack Propagation Resistance of Ductile TiNb-Reinforced γ -TiAl Intermetallic-Matrix Composites," *Materials Science and Engineering A*, vol. A153, 1992, pp. 479-485.
206. L. Muruges, K. T. Venkateswara Rao, L. C. DeJonghe, and R. O. Ritchie, "Fabrication of Nb₃Al Intermetallic *In Situ* Composite Microstructures," in *Developments in Ceramic and Metal-Matrix Composites*, K. Upadhy, ed., TMS, Warrendale, PA, 1992, pp. 65-83.
207. L. Muruges, K. T. Venkateswara Rao, L. C. DeJonghe, and R. O. Ritchie, "Fracture and Fatigue Behavior in Nb₃Al+Nb Intermetallic Composites," in *Intermetallic Matrix Composites II, MRS Symposium Proceedings*, D. Miracle, J. Graves, and D. Anton, eds., vol. 273, Materials Research Society, Pittsburgh, PA, 1992, pp. 433-438.
208. K. T. Venkateswara Rao and R. O. Ritchie, "Microstructural Effects on Fatigue-Crack Growth Behavior in γ -TiAl/ β -TiNb Intermetallic Composites," in *Intermetallic Matrix Composites II, MRS Symposium Proceedings*, D. Miracle, J. Graves, and D. Anton, eds., vol. 273, Materials Research Society, Pittsburgh, PA, 1992, pp. 127-134.
209. W. O. Soboyejo, K. T. Venkateswara Rao, S. M. L. Sastry, and R. O. Ritchie, "Strength, Fracture and Fatigue Behavior of Advanced High-Temperature Intermetallics Reinforced with Ductile Phases," *Metallurgical Transactions A*, vol. 24A (3), March 1993, pp. 585-600.
210. K. T. Venkateswara Rao, S. C. Siu, and R. O. Ritchie, "Failure Mechanisms of SiC-Fiber Reinforced 6061 Aluminum Alloy Composites under Monotonic and Cyclic Loading," *Metallurgical Transactions A*, vol. 24A (3), March 1993, pp. 721-734.
211. R. H. Dauskardt, B. J. Dalgleish, D. Yao, R. O. Ritchie, and P. F. Becher, "Cyclic Fatigue Crack Propagation in a Silicon-Carbide Reinforced Alumina Composite: Role of Load Ratio," *Journal of Materials Science*, vol. 28 (12), June 1993, pp. 3258-3266.
212. R. O. Ritchie, R. M. Cannon, B. J. Dalgleish, R. H. Dauskardt, and J. M. McNaney, "Mechanics and Mechanisms of Crack Growth at or Near Ceramic-Metal Interfaces: Interface Engineering Strategies for Promoting Toughness," *Materials Science and Engineering A*, vol. A166, 1993, pp. 221-235.
213. R. H. Dauskardt, R. O. Ritchie, and B. N. Cox, "Fatigue of Advanced Materials: Part I," *Advanced Materials and Processes*, vol. 144 (7), July 1993, pp. 26-31.
214. R. H. Dauskardt, R. O. Ritchie, and B. N. Cox, "Fatigue of Advanced Materials: Part II," *Advanced Materials and Processes*, vol. 144 (8), August 1993, pp. 30-35.

215. K. T. Venkateswara Rao, J. C. McNulty, and R. O. Ritchie, "The Effects of Prolonged Thermal Exposure on the Fracture and Fatigue Behavior of Aluminum-Lithium Alloy 8090," *Metallurgical Transactions A*, vol. 24A (10), October 1993, pp. 2233-2245.
216. M. J. Hoffman, R. H. Dauskardt, Y.-W. Mai, and R. O. Ritchie, "A Review of the Mechanics and Mechanisms of Cyclic Fatigue-Crack Propagation in Transformation-Toughened Zirconia Ceramics," in *Science and Technology of Zirconia V*, S. P. S. Badwal, M. J. Bannister, and R. H. J. Hannink, eds., Technomic Publ. Co., Lancaster, PA, 1993, pp. 321-338.
217. R. H. Dauskardt and R. O. Ritchie, "Pyrolytic Carbon Coatings," in *An Introduction to Bioceramics*, L. L. Hench and J. Wilson, eds., World Scientific Publ. Co., Singapore, 1993, pp. 261-279.
218. K. T. Venkateswara Rao, G. R. Odette, and R. O. Ritchie, "The Role of Interface and Reinforcement Properties on the Fracture and Fatigue Resistance of Ductile-Phase Toughened γ -TiAl Composites," in *Structural Intermetallics, Proceedings of First International Symposium*, R. Darolia, J. J. Lewandowski, C. T. Liu, P. L. Martin, D. B. Miracle, and M. V. Nanthal, eds., TMS, Warrendale, PA, 1993, pp. 829-835.
219. R. H. Dauskardt, R. O. Ritchie, and A. M. Brendzel, "Role of Small Cracks in the Structural Integrity of Pyrolytic Carbon Heart-Valve Prostheses," in *Bioceramics, Proceedings of Sixth International Symposium on Ceramics in Medicine*, vol. 6, P. Ducheyne and D. Christiansen, eds., Butterworth-Heinemann, Oxford, U.K. 1993, pp. 229-236.
220. L. Murugesu, K. T. Venkateswara Rao, and R. O. Ritchie, "Crack Growth in a Ductile-Phase-Toughened Nb/Nb₃Al *In Situ* Intermetallic Composite under Monotonic and Cyclic Loading," *Scripta Metallurgica et Materialia*, vol. 29 (8), 1993, pp. 1107-1112.
221. J. C. Card, R. M. Cannon, R. H. Dauskardt, and R. O. Ritchie, "Stress-Corrosion Cracking at Ceramic-Metal Interfaces," in *Joining and Adhesion of Advanced Inorganic Materials, MRS Symposium Proceedings*, A. H. Carim, D. S. Schwartz, and R. S. Silbergliitt, eds., vol. 314, Materials Research Society, Pittsburgh, PA, 1993, pp. 109-116.
222. Tae Sung Oh and R. O. Ritchie, "Microstructural Effects on Crack Initiation Toughness J_{Ic} and Crack Growth Toughness T_R ," *Journal of the Korean Institute of Metallurgy and Materials*, vol. 31 (10), 1993, pp. 1279-1288.
223. R. O. Ritchie, R. H. Dauskardt and K. T. Venkateswara Rao, "Matrix and Interfacial Fatigue-Crack Growth in Advanced Structural Materials," in *"Advanced Materials" - New Processes and Reliability, Proceedings of the Third International SAMPE Symposium*, T. Kishi, N. Takada and Y. Kagawa, eds., Society for the Advancement of Material and Process Engineering, Tokyo, Japan, vol. 2, 1993, pp. 1966-1975.
224. R. O. Ritchie, K. T. Venkateswara Rao, and R. H. Dauskardt, "Fatigue-Crack Propagation in Advanced Materials," in *Fatigue '93, Proceedings of the Fifth International Conference on Fatigue and Fatigue Thresholds*, J.-P. Baille and J. I. Dickson, eds., EMAS Ltd., Warley, U.K., vol. 3, 1993, pp. 1899-1918.
225. R. O. Ritchie, K. T. Venkateswara Rao, and R. H. Dauskardt, "Fracture and Fatigue-Crack Propagation Behavior in High-Temperature Ceramics and Intermetallics," in *The Prospect Towards Practical Utilization of Ultra-High Temperature Materials, Proceedings of the Third International Symposium on Ultra-High Temperature Materials '93 in Tajimi, Japan*, 1993, pp. 33-41.
226. R. O. Ritchie, R. M. Cannon, B. J. Dalgleish, R. H. Dauskardt, and J. M. McNaney, "On the Strength and Toughness of Structural Ceramics Bonded to Metals," *Transactions of the Materials Research Society of Japan*, vol. 14A, Dec. 1994, pp. 409-412.
227. C. J. Gilbert, J. M. McNaney, R. H. Dauskardt, and R. O. Ritchie, "Back-Face Strain Compliance and Electrical-Potential Crack Length Calibrations for the Disk-Shaped Compact-Tension DC(T) Specimen," *ASTM Journal of Testing and Evaluation*, vol. 22 (2), March 1994, pp. 117-120.

228. K. T. Venkateswara Rao and R. O. Ritchie, "Fracture and Fatigue Considerations in the Development of Ductile-Phase Reinforced Intermetallic-Matrix Composites," in *Fatigue and Fracture of Ordered Intermetallics and Composites*, W. O. Soboyejo, T. S. Srivatsan, and D. L. Davidson, eds., TMS, Warrendale, PA, 1994, pp. 3-12.
229. R. O. Ritchie and R. H. Dauskardt, "Fatigue-Crack Propagation Behavior in Ceramic Materials," *Transactions of the Materials Research Society of Japan*, vol. 14A, Dec. 1994, pp. 359-364.
230. K. T. Venkateswara Rao, G. R. Odette, and R. O. Ritchie, "Ductile-Reinforcement Toughening in γ -TiAl Intermetallic-Matrix Composites under Monotonic and Cyclic Loading: Effect on Fracture Toughness and Fatigue-Crack Propagation Resistance," *Acta Metallurgica et Materialia*, vol. 42 (3), 1994, pp. 893-911.
231. R. H. Dauskardt, R. O. Ritchie, J. K. Takemoto, and A. M. Brendzel, "Cyclic Fatigue and Fracture in Pyrolytic Carbon-Coated Graphite Mechanical Heart-Valve Prostheses: Role of Small Cracks in Life Prediction," *Journal of Biomedical Materials Research*, vol. 28, 1994, pp. 791-804.
232. R. O. Ritchie, R. H. Dauskardt, and K. T. Venkateswara Rao, "Fatigue-Crack Propagation Behavior in Monolithic and Composite Ceramics and Intermetallics," *Materials Science*, vol. 30 (3), May-June 1994, pp. 277-300.
233. J. M. McNaney, R. M. Cannon and R. O. Ritchie, "Near-Interfacial Crack Trajectories in Metal-Ceramic Layered Structures," *International Journal of Fracture*, vol. 66, 1994, pp. 227-240.
234. B. E. Cornelissen, R. H. Dauskardt, R. O. Ritchie, and G. Thomas, "Cyclic Fatigue Behavior and Fracture Toughness of Silicon Nitride Ceramics Sintered with Rare-Earth Oxides," *Acta Metallurgica et Materialia*, vol. 42 (9), Sept. 1994, pp. 3055-3064.
235. L. Murugesh, K. T. Venkateswara Rao, and R. O. Ritchie, "Powder Processing of Ductile-Phase Toughened Nb/Nb₃Al *In Situ* Composites," *Materials Science and Engineering A*, vol. A189, 1994, pp. 201-208.
236. R. O. Ritchie and R. H. Dauskardt, "Fatigue in Ceramics, Cyclic" in *The Encyclopedia of Advanced Materials*, D. Bloor, R. J. Brook, M. C. Flemings, and S. Mahajan, eds., Pergamon Press, Oxford, U.K., vol. 2, 1994, pp. 791-798.
237. B. J. Dalgleish, E. Saiz, A. P. Tomsia, R. M. Cannon, and R. O. Ritchie, "Interface Formation and Strength in Ceramic-Metal Systems," *Scripta Metallurgica et Materialia*, vol. 31 (8), 1994, pp. 1109-1114.
238. R. O. Ritchie, "Materials Evaluation for Fatigue Resistance in Advanced Ceramics and Intermetallics," in *Materials Evaluation, Proceedings of International Symposium*, Tokyo Institute of Technology, Japan, 1994, pp. 75-90.
239. T. D. Mitchell, L. C. DeJonghe, W. J. MoberlyChan, and R. O. Ritchie, "Silicon Carbide Platelet/Silicon Carbide Composites", *Journal of the American Ceramic Society*, vol. 78 (1), Jan. 1995, 97-103.
240. C. J. Gilbert, R. H. Dauskardt, R. W. Steinbrech, R. N. Petrany, and R. O. Ritchie, "Cyclic Fatigue in Monolithic Alumina: Mechanisms for Crack Advance Promoted by Frictional Wear of Grain Bridges," *Journal of Materials Science*, vol. 30 (3), Feb. 1995, pp. 643-654.
241. J. M. McNaney, R. M. Cannon and R. O. Ritchie, "Elastic Compliance of Four-Point Bend Samples Comprising Two Linear-Elastic Materials Bonded with a Thin Layer," *ASTM Journal of Testing and Evaluation*, vol. 23 (2), March 1995, pp. 95-101.
242. C. D. Bencher, R. H. Dauskardt, and R. O. Ritchie, "Microstructural Damage and Fracture Processes in a Composite Solid Rocket Propellant," *Journal of Spacecrafts and Rockets*, vol. 32 (2) March-April 1995, pp. 328-334.
243. M. J. Hoffman, Y.-W. Mai, R. H. Dauskardt, J. Ager, and R. O. Ritchie, "Grain Size Effects on Cyclic Fatigue and Crack-Growth Resistance Behavior of Partially Stabilized Zirconia," *Journal of Materials Science*, vol. 30 (13), July 1995, pp. 3291-3299.

244. K. T. Venkateswara Rao, Y.-W. Kim, C. H. Muhlstein, and R. O. Ritchie, "Fatigue-Crack Growth and Fracture Resistance of Duplex and Lamellar Microstructures in a Two-Phase ($\gamma+\alpha_2$) TiAl Intermetallic Alloy", *Materials Science and Engineering A*, vol. 192/193, Feb. 1995, pp. 474-482.
245. K. T. Venkateswara Rao, Y.-W. Kim, and R. O. Ritchie, "High-Temperature Fatigue-Crack Growth Behavior in a Two-Phase ($\gamma+\alpha_2$) TiAl Intermetallic Alloy", *Scripta Metallurgica et Materialia*, vol. 33 (3), Aug. 1995, pp. 459-465.
246. R. H. Dauskardt, R. O. Ritchie, J. K. Takemoto, and A. M. Brendzel, "Reply to Discussion of 'Cyclic Fatigue and Fracture in Pyrolytic Carbon-Coated Graphite Mechanical Heart-Valve Prostheses: Role of Small Cracks in Life Prediction'", *Journal of Biomedical Materials Research*, vol. 29 (5), May 1995, pp. 676-678.
247. C. D. Bencher, A. Sakaida, K. T. Venkateswara Rao, and R. O. Ritchie, "Mechanisms of Ductile-Phase Toughening in Niobium-Reinforced Niobium Aluminide (Nb-Nb₃Al) *In Situ* Composites," *Metallurgical and Materials Transactions A*, vol. 26 (8), Aug. 1995, pp. 2027-2033.
248. M. D. Drory, R. H. Dauskardt, A. Kant, and R. O. Ritchie, "Fracture of Synthetic Diamond", *Journal of Applied Physics*, vol. 78 (5), Sept. 1995, pp. 3083-3088.
249. C. J. Gilbert, R. H. Dauskardt, and R. O. Ritchie, "Behavior of Cyclic Fatigue Cracks in Monolithic Silicon Nitride", *Journal of the American Ceramic Society*, vol. 78 (9), Sept. 1995, pp. 2291-2300.
250. K. T. Venkateswara Rao and R. O. Ritchie, "Toughness and Fatigue-Crack Growth in γ -TiAl Intermetallic Composites at Ambient and High Temperatures," in *Fatigue and Fracture of Ordered Intermetallics and Composites II*, W. O. Soboyejo, T. S. Srivatsan, and R. O. Ritchie, eds., TMS, Warrendale, PA, 1995, pp. 327-338.
251. K. T. Venkateswara Rao, Y.-W. Kim, and R. O. Ritchie, "Fatigue-Crack Growth Behavior in a Dual-Phase ($\gamma+\alpha_2$) TiAl Intermetallic Alloy at Elevated Temperatures", in *Gamma Titanium Aluminides, Proceedings of the International Symposium*, Y.-W. Kim, R. Wagner and M. Yamaguchi, eds., TMS, Warrendale, PA, 1995, pp. 893-901.
252. R. O. Ritchie, R. H. Dauskardt, W. W. Gerberich, A. Strojny, and E. Lilleodden, "Fracture, Fatigue and Indentation Behavior of Pyrolytic Carbon for Biomedical Applications", in *Mechanical Behavior of Diamond and Other Forms of Carbon, MRS Symposium Proceedings*, M. D. Drory, D. Bogy, M. S. Donley, and J. E. Field, eds., vol. 383, Materials Research Society, Pittsburgh, PA, 1995, pp. 229-254.
253. A. Kant, M. D. Drory, and R. O. Ritchie, "Fracture Toughness and Subcritical Crack Growth in CVD Diamond", in *Mechanical Behavior of Diamond and Other Forms of Carbon, MRS Symposium Proceedings*, M. D. Drory, D. Bogy, M. S. Donley, and J. E. Field, eds., vol. 383, Materials Research Society, Pittsburgh, PA, 1995, pp. 289-294.
254. R. O. Ritchie, "Crack Propagation in Metal-Matrix Composites. I: Interaction of Cracks with Metal/Ceramic Interfaces", in *Mechanical Behaviour of Materials at High Temperatures*, C. Moura Branco, R. O. Ritchie, and V. Sklenicka, eds., Kluwer, Dordrecht, The Netherlands, 1996, pp. 445-460.
255. R. O. Ritchie, "Crack Propagation in Metal-Matrix Composites. II: Mechanisms of Fatigue-Crack Growth", in *Mechanical Behaviour of Materials at High Temperatures*, C. Moura Branco, R. O. Ritchie, and V. Sklenicka, eds., Kluwer, Dordrecht, The Netherlands, 1996, pp. 461-494.
256. R. O. Ritchie and C. J. Gilbert, "Toughened Silicon Carbides for High Temperature Use", in *Mechanical Behaviour of Materials at High Temperatures*, C. Moura Branco, R. O. Ritchie, and V. Sklenicka, eds., Kluwer, Dordrecht, The Netherlands, 1996, pp. 567-578.
257. C. D. Bencher, L. Murugesu, K. T. Venkateswara Rao, and R. O. Ritchie, "Phase Transformations in an *In Situ* Nb-Reinforced Nb₃Al Intermetallic Composite," *Intermetallics*, vol. 4 (1), 1996, pp. 23-29.

258. R. O. Ritchie, "On the Interaction of Cracks with Bimaterial Interfaces," *Materials Science*, vol. 32 (1), Jan.-Feb. 1996, pp. 107-120.
259. J. J. Cao, W. J. MoberlyChan, L. C. DeJonghe, C. J. Gilbert, and R. O. Ritchie, "In Situ Toughened Silicon Carbide with Al-B-C Additions", *Journal of the American Ceramic Society*, vol. 79 (2), Feb. 1996, pp. 461-469.
260. R. O. Ritchie, "Fatigue and Fracture of Pyrolytic Carbon: A Damage-Tolerant Approach to Structural Integrity and Life Prediction in "Ceramic" Heart-Valve Prostheses", *Journal of Heart Valve Disease*, vol. 5, Suppl. 1, June 1996, pp. S9-31.
261. C. J. Gilbert, J. Cao, W. J. MoberlyChan, L. C. DeJonghe, and R. O. Ritchie, "Cyclic Fatigue and Resistance-Curve Behavior of an *In Situ* Toughened Silicon Carbide with Al-B-C Additions", *Acta Materialia*, vol. 44 (8), Aug. 1996, pp. 3199-3214.
262. D. R. Bloyer, K. T. Venkateswara Rao and R. O. Ritchie, "Resistance-Curve Toughening in Ductile/Brittle Layered Structures: Behavior in Nb/Nb₃Al Laminates," *Materials Science and Engineering A*, vol A216 (1-2), Oct. 1996, pp. 80-90.
263. R. O. Ritchie and C. J. Gilbert, "Resistance to Cyclic Fatigue of Silicon Carbide Ceramics at Ambient and Elevated Temperatures", *Anales de la Asociación Química Argentina*, vol. 83 (6), Nov./Dec. 1996, pp. 307-315.
264. K. Badrinarayanan, A. L. McKelvey, K. T. Venkateswara Rao, and R. O. Ritchie, "Fracture and Fatigue-Crack Growth in Ductile-Phase Toughened Molybdenum Disilicide: Effects of Niobium Wire vs. Particulate Reinforcements," *Metallurgical and Materials Transactions A*, vol. 27 (12), Dec. 1996, pp. 3781-3792.
265. J. P. Campbell, K. T. Venkateswara Rao and R. O. Ritchie, "Fatigue-Crack Growth and Fracture Behavior in a XD™ γ -TiAl Alloy with a Fine Lamellar Microstructure," in *Fatigue '96, Proceedings of the Sixth International Congress on Fatigue*, G. Lüterjng and H. Nowack., eds., Pergamon Press, Oxford, U.K., vol III, 1996, pp. 1779-1784.
266. A. L. McKelvey, J. P. Campbell, K. T. Venkateswara Rao and R. O. Ritchie, "High Temperature Fatigue-Crack Growth Behavior in an XD™ γ -TiAl Intermetallic Alloy," in *Fatigue '96, Proceedings of the Sixth International Congress on Fatigue*, G. Lüterjng and H. Nowack, eds., Pergamon Press, Oxford, U.K., vol III, 1996, pp. 1743-1748.
267. C. J. Gilbert, R. O. Ritchie, J. J. Cao, W. J. MoberlyChan, and L. C. DeJonghe, "Cyclic Fatigue Crack Growth in a Novel, High-Toughness Silicon Carbide at Ambient and Elevated Temperatures," in *Fatigue '96, Proceedings of the Sixth International Congress on Fatigue*, G. Lüterjng and H. Nowack, eds., Pergamon Press, Oxford, U.K., vol III, 1996, pp. 1645-1650.
268. H. Yamaguchi, K. Nishiyama, Y. Higo, and R. O. Ritchie, "Development of the Bending Fatigue Test Method for Microspecimens," in *Fatigue '96, Proceedings of the Sixth International Congress on Fatigue*, G. Lüterjng and H. Nowack, eds., Pergamon Press, Oxford, U.K., vol III, 1996, pp. 1949-1954.
269. D. R. Bloyer, K. T. Venkateswara Rao and R. O. Ritchie, "Resistance-Curve Toughening in Ductile-Phase Intermetallic Laminates," in *Johannes Weertman Symposium*, R. J. Arsenault, D. Cole, T. Gross, G. Kostorz, P. K. Liaw, S. Parameswaran, and H. Sizek, eds., TMS, Warrendale, PA, 1996, pp. 261-266.
270. W. J. MoberlyChan, R. M. Cannon, L. H. Chan, J. J. Cao, C. J. Gilbert, R. O. Ritchie, and L. C. DeJonghe, "Microstructural Development to Toughen SiC", in *Covalent Ceramics III - Science and Technology of Non-Oxides, MRS Symposium Proceedings*, G. S. Fischman, A. F. Hepp, P. N. Kumta, A. E. Kaloyeros, and J. J. Sullivan, eds., vol. 410, Materials Research Society, Pittsburgh, PA, 1996, pp. 257-262.

271. K. T. Venkateswara Rao, C. J. Gilbert, and R. O. Ritchie, "Damage Tolerance in Intermetallic and Ceramic Materials at Ambient and Elevated Temperatures: Role of Extrinsic vs. Intrinsic Mechanisms," in *Processing and Design Issues in High Temperature Materials*, N. S. Stoloff and R. H. Jones, eds., The Minerals, Metals and Materials, Warrendale, PA, 1996, pp. 209-220.
272. J. P. Campbell, A. L. McKelvey, S. Lillibridge, K. T. Venkateswara Rao and R. O. Ritchie, "Fracture and Fatigue in γ -Based TiAl Alloys with Fine Lamellar Microstructures: Long and Small Crack Behavior," in *Deformation and Fracture of Ordered Intermetallic Materials III*, W. O. Soboyejo, T. S. Srivatsan, and H. L. Fraser, eds., TMS, Warrendale, PA, 1996, pp. 141-157.
273. D. R. Bloyer, K. T. Venkateswara Rao and R. O. Ritchie, "Toughness and Subcritical Crack Growth in Nb/Nb₃Al Layered Materials," in *Layered Materials for Structural Applications*, MRS Symposium Proceedings, J. J. Lewandowski, C. H. Ward, M. R. Jackson, and W. H. Hunt, Jr., eds., vol. 434, Materials Research Society, Pittsburgh, PA, 1996, pp. 243-248.
274. J. M. McNaney, R. M. Cannon and R. O. Ritchie, "Fracture and Fatigue-Crack Growth along Aluminum/Alumina Interfaces," *Acta Materialia*, vol. 44 (12), Dec. 1996, pp. 4713-4728.
275. R. O. Ritchie, "Small Cracks and High-Cycle Fatigue", in *Proceedings of the ASME Aerospace Division*, J. C. I. Chang, J. Coulter, D. Brei, D. Martinez, W. Hg, and P. P. Freidmann, eds., AMD-Vol. 52, American Society of Mechanical Engineers, New York, NY, 1996, pp. 321-333.
276. R. O. Ritchie and K. T. Venkateswara Rao, "Cyclic Fatigue-Crack Growth in Toughened Ceramics and Intermetallics at Ambient to Elevated Temperatures," in *ECF-11 - Mechanisms and Mechanics of Damage and Failure*, Proceedings of the Eleventh European Conference on Fracture, J. Petit, ed., EMAS, Warley, U.K., vol. 1, 1996, pp. 53-69.
277. ^{vi}J. M. McNaney, R. Havens, and R. O. Ritchie, "Elastic Compliance of the Compact-Tension Specimen Comprising Two Linear-Elastic Materials Bonded with a Thin Layer," *ASTM Journal of Testing and Evaluation*, vol. 25 (1), Jan. 1997, pp. 28-35.
278. C. J. Gilbert, R. H. Dauskardt, and R. O. Ritchie, "Microstructural Mechanisms of Cyclic Fatigue-Crack Propagation in Grain-Bridging Ceramics," *Ceramics International*, vol. 23 (5), 1997, pp. 413-418.
279. T. L. Becker, Jr., J. M. McNaney, R. M. Cannon and R. O. Ritchie, "Limitations on the Use of the Mixed-Mode Delaminating Beam Test Specimen: Effect of the Size of the Region of K-Dominance," *Mechanics of Materials*, vol. 25 (4), May-June 1997, pp. 291-308.
288. R. O. Ritchie and K. T. Venkateswara Rao, "Fatigue of Ceramics and Intermetallics: Application to Damage Tolerance and Life Prediction in Cyclically-Loaded Brittle Materials," in *Reliability Assessment of Cyclically Loaded Engineering Structures*, Kluwer, Dordrecht, The Netherlands, 1997, pp. 377-403.
281. C. J. Gilbert, J. J. Cao, L. C. DeJonghe, and R. O. Ritchie, "Resistance-Curve Behavior in Silicon Carbide: Small versus Long Cracks", *Journal of the American Ceramic Society*, vol. 80 (9), Sept. 1997, pp. 2253-2261.
282. T. L. Becker, Jr., J. M. McNaney, R. M. Cannon and R. O. Ritchie, "Effects of the Limited Region of K-Dominance in the Mixed-Mode Delaminating Beam Test Specimen," *Ceramic Transactions*, vol. 77, 1997, pp. 149-156.
283. C. J. Gilbert and R. O. Ritchie, "Mechanisms of Cyclic Fatigue-Crack Propagation in a Fine-Grained Alumina Ceramic: Role of Crack Closure", *Fatigue & Fracture of Engineering Materials & Structures*, vol. 20 (10), 1997, pp. 1453-1466.
284. J. M. McNaney, R. M. Cannon and R. O. Ritchie, "Effects of Plasticity on the Toughness and Fatigue Crack Propagation of Metal/Ceramic Interfaces," *Ceramic Transactions*, vol. 77, 1997, pp. 157-164.

^{vi} ASME *Journal of Testing and Evaluation* Award for Most Outstanding Paper, 1998.

285. C. J. Gilbert and R. O. Ritchie, "Cyclic Fatigue and Resistance-Curve Toughening in *In Situ* Toughened Silicon Carbide at Ambient to Elevated Temperatures", in *Composites and Functionally Graded Materials*, Proceedings of the 1997 ASME International Mechanical Engineering Congress and Exposition, T. S. Srivatsan, A. Zavaliangos, K. I. Jacob, N. Katsube, W. Jones, K. Ramani, S. Sitaraman, and S. Yang, eds., American Society of Mechanical Engineers, New York, NY, 1997, pp. 393-398.
286. M.-H. Hong, J. M. McNaney, and R. O. Ritchie, "Fatigue-Crack Growth of Small Cracks in a Directionally-Solidified Nickel Aluminide with Molybdenum Additions," *Scripta Materialia*, vol. 38 (2), Dec. 1997, pp. 245-251.
287. C. J. Gilbert, R. O. Ritchie, and W. L. Johnson, "Fracture Toughness and Fatigue-Crack Propagation in a Zr-Ti-Ni-Cu-Be Bulk Metallic Glass," *Applied Physics Letters*, vol. 71 (4), July 28, 1997, pp. 476-478.
288. J. P. Campbell, J. J. Kruzic, S. Lillibridge, K. T. Venkateswara Rao, and R. O. Ritchie, "On the Growth of Small Fatigue Cracks in γ -Based Titanium Aluminides," *Scripta Materialia*, vol. 37 (5) Sept. 1997, pp. 707-712.
289. J. J. Mason and R. O. Ritchie, "Fatigue Crack Growth Resistance in SiC Particulate and Whisker Reinforced P/M 2124 Aluminum Matrix Composites," *Materials Science and Engineering A*, vol. A231 (1-2), July 1997, pp. 170-182.
290. A. L. McKelvey, K. T. Venkateswara Rao, and R. O. Ritchie, "On the Anomalous Temperature Dependence of Fatigue-Crack Growth in γ -Based Titanium Aluminides," *Scripta Materialia*, vol. 37 (11), Dec. 1997, pp. 1797-1803.
291. D. R. Bloyer, R. O. Ritchie, and K. T. Venkateswara Rao, "Laminated Nb/Nb₃Al Composites: Effect of Layer Thickness on Fatigue and Fracture Behavior," *Materials Science and Engineering A*, vol. A239-240, Dec. 1997, pp. 393-398.
292. J. P. Campbell, K. T. Venkateswara Rao, and R. O. Ritchie, "On the Role of Microstructure in Fatigue-Crack Growth of γ -Based Titanium Aluminides," *Materials Science and Engineering A*, vol. A239-240, Dec. 1997, pp. 722-728.
293. A. Kant, M. D. Drory, N. R. Moody, W. J. MoberlyChan, J. W. Ager III, and R. O. Ritchie, "Microstructural Effects on the Hardness, Elastic Modulus and Fracture Toughness of CVD Diamond," in *Thin Films – Stresses and Mechanical Properties VII*, R. C. Cammarata, M. Nastasi, E. P. Brusso, and W. C. Oliver, eds., MRS Symposium Proceedings, vol. 505, Materials Research Society, Warrendale, PA, 1998, pp. 611-616.
294. C. J. Gilbert and R. O. Ritchie, "On the Quantification of the Bridging Tractions during Subcritical Crack Growth under Monotonic and Cyclic Loading in a Grain-Bridging Silicon Carbide Ceramic", *Acta Materialia*, vol. 46 (2), Jan. 1998, pp. 609-616.
295. W. J. MoberlyChan, J. J. Cao, C. J. Gilbert, R. O. Ritchie, and L. C. De Jonghe, "The Cubic-to-Hexagonal Transformation to Toughen SiC", in *Ceramic Microstructures: Control at the Atomic Level*, A. P. Tomsia and A. M. Glaeser, eds., Plenum Press, New York, NY, 1998, pp. 177-190.
296. C. J. Gilbert, J. M. Lippmann, and R. O. Ritchie, "Fatigue of a Zr-Ti-Ni-Cu-Be Bulk Amorphous Metal: Stress/Life and Crack-Growth Behavior," *Scripta Materialia*, vol. 38 (4), Jan. 1998, pp. 537-542.
297. R. O. Ritchie and C. J. Gilbert, "Mechanisms of (Cyclic) Fatigue-Crack Propagation in High Temperature Ceramics", in Proceedings of the *Sixth International Symposium on Ceramic Materials and Components for Engines*, Arita, Japan, K. Niihara, S. Kanzaki, K. Komeya, S. Hirano, and K. Morinaga, eds., Technoplaza Co. Ltd., Tokyo, Japan, 1998, pp. 110-113.
298. L. Gordon, M. Tolar, K. T. Venkateswara Rao, R. O. Ritchie, S. Rabinowitz and R. P. Lamb: "Flexor Tendon Repair using a Stainless Steel Internal Anchor: Biomechanical Study on Human Cadaver Tendons," *Journal of Hand Surgery (British Volume)*, vol. 23B (1), Feb. 1998, pp. 37-40.

299. R. O. Ritchie, "Damage Tolerance in Intermetallics and Ceramics: Fracture vs. Fatigue Behavior", in *Proceedings of the International Symposium on Designing, Processing, and Properties of Advanced Engine Materials (ISAEM-97)*, T. Kobayashi, M. Umemoto, and M. Morinaga, eds., Japan Society for the Promotion of Science, Toyohashi City, Japan, AEM vol. 156, 1998, pp. 25-35.
300. K. T. Venkateswara Rao, and R. O. Ritchie, "High-Temperature Fracture and Fatigue Resistance of a Ductile β -TiNb Reinforced γ -TiAl Intermetallic Composite," *Acta Materialia*, vol. 46 (12), July 1998, pp. 4167-4180.
301. C. J. Gilbert and R. O. Ritchie, "Transient Fatigue Crack Behavior in a Monolithic Silicon Nitride Ceramic", *Engineering Fracture Mechanics*, vol. 60 (3), June 1998, pp. 303-313.
302. A. J. McEvily and R. O. Ritchie, "Crack Closure and the Fatigue-Crack Propagation Threshold as a Function of Load Ratio," *Fatigue & Fracture of Engineering Materials & Structures*, vol. 21 (7), July 1998, pp. 847-855.
303. D. R. Bloyer, K. T. Venkateswara Rao, and R. O. Ritchie, "Fracture Toughness and R-Curve Behavior of Laminated Brittle-Matrix Composites," *Metallurgical and Materials Transactions A*, vol. 29A (10) Oct. 1998, pp. 2483-2496.
304. V. Schroeder, C. J. Gilbert, and R. O. Ritchie, "Comparison of the Corrosion Behavior of a Bulk Amorphous Metal, $Zr_{41.2}Ti_{13.8}Cu_{12.5}Ni_{10}Be_{22.5}$, with its Crystallized Form," *Scripta Materialia*, vol. 38 (10), April 1998, pp. 1481-1485.
305. S. Chen, R. O. Ritchie, A. Zettl, and U. Dahmen, "In Situ Bending Deformation of Carbon Nanotubes in a HVEM," in *Electron Microscopy 1998*, Proceedings of the 14th International Congress on Electron Microscopy, vol. 3, 1998, pp. 75-76.
306. B. L. Boyce and R. O. Ritchie, "Lower-Bound Thresholds for Fatigue-Crack Propagation under High-Cycle Fatigue Conditions in Ti-6Al-4V," in *Proceedings of the Third National Turbine Engine High Cycle Fatigue Conference*, W. A. Stange and J. Henderson, eds., Universal Technology Corp., Dayton, OH, 1998, CD-Rom, session 5, pp. 11-18.
307. J. P. Campbell, A. W. Thompson, R. O. Ritchie, and D. L. Davidson, "Microstructural Effects on Small-Crack Propagation in Ti-6Al-4V under High-Cycle Fatigue Conditions," in *Proceedings of the Third National Turbine Engine High Cycle Fatigue Conference*, W. A. Stange and J. Henderson, eds., Universal Technology Corp., Dayton, OH, 1998, CD-Rom, session 5, pp. 19-21.
308. O. Roder, A. W. Thompson, and R. O. Ritchie, "Simulation of Foreign Object Damage of Ti-6Al-4V Gas-Turbine Blades," in *Proceedings of the Third National Turbine Engine High Cycle Fatigue Conference*, W. A. Stange and J. Henderson, eds., Universal Technology Corp., Dayton, OH, 1998, CD-Rom, session 10, pp. 6-12.
309. R. O. Ritchie, B. L. Boyce, J. P. Campbell, and O. Roder, "High-Cycle Fatigue of Turbine Engine Alloys", *Proceedings of the 24th Symposium on Fatigue*, The Society of Materials Science, Kyoto, Japan, 1998, pp. 1-6.
310. R. O. Ritchie, R. M. Cannon, J. M. McNaney, and J. C. Card, "On the Structural Integrity of Metal-Joined Ceramics," *Proceedings of the 9th CIMTEC-World Ceramics Congress and Forum on New Materials*, P. Vincenzini, ed., Techna Srl., Faenza, Italy, 1999.
311. A. Ziegler, J. M. McNaney, and R. O. Ritchie, "Subcritical Crack Growth in NT-164 Silicon Nitride at Elevated Temperatures," *Proceedings of the 9th CIMTEC-World Ceramics Congress and Forum on New Materials*, P. Vincenzini, ed., Techna Srl., Faenza, Italy, 1999.
312. C. J. Gilbert, Y. S. Han, D. K. Kim, and R. O. Ritchie, "Anomalous Cyclic Fatigue-Crack Propagation Behavior of Small Cracks in Monolithic Grain-Bridging Ceramics," *Proceedings of the 9th CIMTEC-World Ceramics Congress and Forum on New Materials*, P. Vincenzini, ed., Techna Srl., Faenza, Italy, 1999.

313. R. O. Ritchie, "On the Development of Fatigue-Crack Growth Resistance in Intermetallic Alloys", in *Proceedings of the U.S.–Japan Workshop on Very-High Temperature Structural Materials*, M. Yamaguchi and T. Pollock, eds., 1999, pp. 139-144.
314. J. M. McNaney, R. M. Cannon, R. O. Ritchie, and P. Papadopoulos, "Statistical Aspects of the Strength and Toughness of Metal-Ceramic Interfaces," *Proceedings of the 9th CIMTEC-World Ceramics Congress and Forum on New Materials*, P. Vincenzini, ed., Techna Srl., Faenza, Italy, 1999.
315. R. O. Ritchie, "Contrasting the Nature of Fatigue-Crack Propagation in Ductile and Brittle Materials", Chapter 13 in *Engineering Against Fatigue*, J. H. Beynon, M. W. Brown, T. C. Lindley, R. A. Smith, and B. Tomkins, eds., Balkema Publ., Rotterdam, The Netherlands, Chapt. 21, 1999, pp. 199-209.
316. R. O. Ritchie, "Fatigue-Crack Propagation", Chapter 15 in *Mechanics and Materials: Fundamentals and Linkages*, M. A. Meyers, R. W. Armstrong, and H. O. K. Kirchner, eds., Wiley, New York, NY, 1999, pp. 595-607.
317. Inho Gu and R. O. Ritchie, "On the Crack-Tip Blunting Model for Fatigue Crack Propagation in Ductile Materials," in *Fatigue and Fracture: 29th Volume*, ASTM STP 1332, T. L. Panontin and S. D. Sheppard, eds., American Society for Testing and Materials, West Conshohocken, PA, 1999, pp. 552-564.
318. R. O. Ritchie, B. L. Boyce, J. P. Campbell, O. Roder, A. W. Thompson, and W. W. Milligan, "Thresholds for High-Cycle Fatigue in a Turbine Engine Ti-6Al-4V Alloy", *International Journal of Fatigue*, vol. 21 (7), 1999, pp. 653-662.
319. R. O. Ritchie, "Aspects of Fatigue-Crack Growth in Intermetallic Alloys", *Transactions of the Nonferrous Metals Society of China*, vol. 9, Suppl. 1, June 1999, pp. 214-227.
320. S. A. Padula, II, A. Shyam, R. O. Ritchie, and W. W. Milligan, "High Frequency Fatigue Crack Propagation Behavior of a Nickel-Base Turbine Disk Alloy", *International Journal of Fatigue*, vol. 21 (7), 1999, pp. 725-731.
321. D. R. Bloyer, K. T. Venkateswara Rao, and R. O. Ritchie, "Fatigue-Crack Propagation Behavior of Ductile/Brittle Laminated Composites," *Metallurgical and Materials Transactions A*, vol. 30A (3), March 1999, pp. 633-642.
322. J. P. Campbell, K. T. Venkateswara Rao, and R. O. Ritchie, "On the Effect of Microstructure on Fracture Toughness and Fatigue-Crack Growth Behavior in γ -Based Titanium Aluminide Intermetallics," *Metallurgical and Materials Transactions A*, vol. 30A (3), March 1999, pp. 563-577.
323. B. L. Boyce and R. O. Ritchie, "On the Definition of Lower-Bound Fatigue-Crack Propagation Thresholds in Ti-6Al-4V under High-Cycle Fatigue Conditions," in *Proceedings of the Fourth National Turbine Engine High Cycle Fatigue (HCF) Conference*, J. Henderson, ed., Universal Technology Corp., Dayton, OH, 1999, CD-Rom, session 2, pp. 29-40.
324. J. P. Campbell, A. W. Thompson, and R. O. Ritchie, "Mixed-Mode Crack-Growth Thresholds in Ti-6Al-4V under Turbine-Engine High-Cycle Fatigue Loading Conditions," in *Proceedings of the Fourth National Turbine Engine High Cycle Fatigue (HCF) Conference*, J. Henderson, ed., Universal Technology Corp., Dayton, OH, 1999, CD-Rom, session 2, pp. 41-49.
325. B. L. Boyce, A. W. Thompson, O. Roder, and R. O. Ritchie, "Measurement of Residual Stresses in Impact-Damaged Ti-6Al-4V," in *Proceedings of the Fourth National Turbine Engine High Cycle Fatigue (HCF) Conference*, J. Henderson, ed., Universal Technology Corp., Dayton, OH, 1999, CD-Rom, session 10, pp. 28-40.
326. T. L. Becker, R. M. Cannon, and R. O. Ritchie, "A Statistical RKR Fracture Model for the Brittle Fracture of Functionally Graded Materials", *Materials Science Forum*, vol. 308-311, 1999, pp. 957-962.

327. O. Roder, J. O. Peters, A. W. Thompson, and R. O. Ritchie, "Influence of Simulated Foreign Object Damage on the High-Cycle Fatigue Properties of Ti-6Al-4V for Gas-Turbine Blades," in *Proceedings of the Third National Turbine Engine High Cycle Fatigue Conference*, W. A. Stange and J. Henderson, eds., Universal Technology Corp., Dayton, OH, 1999, CD-Rom, session 10, pp. 41- 50.
328. J. J. Kruzic, J. P. Campbell, and R. O. Ritchie, "On the Fatigue Behavior of γ -Based Titanium Aluminides: Role of Small Cracks," *Acta Materialia*, vol. 47 (3), Feb. 1999, pp. 801-816.
329. C. J. Gilbert, V. Schroeder, and R. O. Ritchie, "Mechanisms for Fracture and Fatigue-Crack Propagation in a Bulk Metallic Glass," *Metallurgical and Materials Transactions A*, vol. 30A (8), July 1999, pp. 1739-1753.
330. R. O. Ritchie, D. L. Davidson, B. L. Boyce, J. P. Campbell, and O. Roder, "High-Cycle Fatigue of Ti-6Al-4V", *Fatigue & Fracture of Engineering Materials & Structures*, vol. 22, July 1999, pp. 621-631.
331. J. J. Kruzic, J. P. Campbell, and R. O. Ritchie, "Fatigue-Crack Propagation in Gamma-Based Titanium Aluminide Alloys at Large and Small Crack Sizes", in *High Temperature Ordered Intermetallic Alloys VIII*, E. P. George, M. J. Mills, and M. Yamaguchi, eds., MRS Symposium Proceedings, vol. 552, Materials Research Society, Warrendale, PA, 1999, pp. 1-6.
332. B. L. Boyce, J. P. Campbell, and O. Roder, A. W. Thompson, and R. O. Ritchie, "Aspects of High-Cycle Fatigue Performance in a Ti-6Al-4V Alloy", in *Fatigue Behavior of Titanium Alloys*, R. R. Boyer, D. Eylon, and G. Lütjering, eds., TMS, Warrendale, 1999, pp. 3-13.
333. C. J. Gilbert, J. W. Ager III, V. Schroeder, and R. O. Ritchie, "Mechanism for Light Emission during Fracture of a Zr-Ti-Ni-Cu-Be Bulk Metallic Glass: Temperature Measurements in Air and Nitrogen", in *Bulk Metallic Glasses*, W. L. Johnson, A. Inoue, and C. T. Liu, eds., MRS Symposium Proceedings, vol. 554, Materials Research Society, Warrendale, PA, 1999, pp. 191-196.
334. C. J. Gilbert, V. Schroeder, and R. O. Ritchie, "Fracture and Fatigue in a Zr-Based Bulk Metallic Glass", in *Bulk Metallic Glasses*, W. L. Johnson, A. Inoue, and C. T. Liu, eds., MRS Symposium Proceedings, vol. 554, Materials Research Society, Warrendale, PA, 1999, pp. 343-354.
335. A. L. McKelvey and R. O. Ritchie, "Fatigue-Crack Growth in the Superelastic Endovascular Stent Material Nitinol", in *Tissue Engineering*, E. Chen, C. Laurencin, M. Marcolongo, and G. Picciolo, eds., MRS Symposium Proceedings, vol. 550, Materials Research Society, Warrendale, PA, 1999.
336. L. Gordon, F. A. Dysarz, K. T. Venkateswara Rao, A. Mok, R. O. Ritchie, and S. Rabinowitz: "Flexor Tendon Repair using a Stainless Steel External Splint: Biomechanical Study on Human Cadaver Tendons," *Journal of Hand Surgery (British and European Volume)*, 1999, vol.24B (6), pp. 654-657.
337. J. M. McNaney, C. J. Gilbert, and R. O. Ritchie, "Effect of Viscous Grain Bridging on Cyclic Fatigue-Crack Growth in Monolithic Ceramics at Elevated Temperatures", *Acta Materialia*, vol. 47 (9), July 1999, pp. 2809-2819.
338. C. J. Gilbert, J. W. Ager III, V. Schroeder, J. P. Lloyd, J. R. Graham, and R. O. Ritchie, "Light Emission during Fracture of a Zr-Ti-Ni-Cu-Be Bulk Metallic Glass", *Applied Physics Letters*, vol. 74 (25), June 21, 1999, pp. 3809-3811.
339. A. L. McKelvey and R. O. Ritchie, "Fatigue-Crack Propagation in Nitinol, a Shape-Memory and Superelastic Endovascular Stent Material", *Journal of Biomedical Materials Research*, vol. 47, Dec., 1999, pp. 301-308.
340. V. Schroeder, C. J. Gilbert, and R. O. Ritchie, "Effect of Aqueous Environment on Fatigue-Crack Propagation Behavior in a Zr-Based Bulk Amorphous Metal", *Scripta Materialia*, vol. 49 (9), April 1999, pp. 1057-1061.

341. ^{vii}R. O. Ritchie, "Small-Crack Growth and the Fatigue of Traditional and Advanced Materials", in *Fatigue '99, Proceedings of the Seventh International Fatigue Congress*, X.-R. Wu and Z. G. Wang, eds., Higher Education Press, Beijing, China/EMAS, Warley, U.K., vol. 1, 1999, pp. 1-14.
342. R. O. Ritchie, "The Importance of Small Crack Effects in the Microstructural Development of Advanced Materials", in *Small Fatigue Cracks: Mechanics, Mechanisms and Applications*, K. S. Ravichandran, R. O. Ritchie, and Y. Murakami, eds., Elsevier, Oxford, U.K. 1999, pp. 233-246.
343. C. J. Gilbert, Y. S. Han, D. K. Kim, and R. O. Ritchie, "Small Crack Effects in Ceramic Materials", in *Small Fatigue Cracks: Mechanics, Mechanisms and Applications*, K. S. Ravichandran, R. O. Ritchie, and Y. Murakami, eds., Elsevier, Oxford, U.K. 1999, p. 283-288.
344. C. J. Gilbert, V. Schroeder, and R. O. Ritchie, "Fracture and Fatigue of Amorphous Metals", in *Progress in Mechanical Behaviour of Materials – ICM-8, Proceedings of the Eighth International Conference on the Mechanical Behaviour of Materials*, F. Ellyin and J. W. Provan, eds., Pergamon Press, Oxford, U.K., Vol. I, 1999, pp. 14-18.
345. J. J. Kruzic, J. P. Campbell, A. L. McKelvey, H. Choe, and R. O. Ritchie, "The Contrasting Role of Microstructure in Influencing Fracture and Fatigue-Crack Growth in γ -Based Titanium Aluminides at Large and Small Crack Sizes", in *Gamma Titanium Aluminides 1999*, Y.-W. Kim, D. M. Dimiduk, and M. H. Loretto, eds., TMS, Warrendale, PA, 1999, pp. 495-507.
346. J. P. Campbell and R. O. Ritchie, "Mixed-Mode Fatigue-Crack Growth Thresholds in Bimodal Ti-6Al-4V", *Scripta Materialia*, vol. 41 (10), Oct. 1999, pp. 1067-1071.
347. R. O. Ritchie, C. J. Gilbert, and V. Schroeder, "Fracture and Fatigue Behavior in Advanced Materials: Bulk Metallics Glasses", in *Proceedings of the International Conference on Advanced Technology in Experimental Mechanics (ATEM'99)*, The Japanese Society of Mechanical Engineers, Shinjuku-ku, Tokyo, Japan, vol. 1, 1999, pp. 9-16.
348. R. O. Ritchie, "Mechanisms of Fatigue-Crack Propagation in Ductile and Brittle Solids", *International Journal of Fracture*, vol. 100 (1), 1999, 55-83.
349. R. O. Ritchie, C. J. Gilbert, and J. M. McNaney, "Mechanics and Mechanisms of Fatigue Damage and Crack Growth in Advanced Materials", *International Journal of Solids and Structures*, vol. 37 (1-2), Jan. 2000, pp. 311-329.
350. A. Tatzchl, C. J. Gilbert, V. Schroeder, R. Pippan, and R. O. Ritchie, "Quantitative Analysis of Fracture Surface Morphologies in a Zr-Ti-Ni-Cu-Be Bulk Metallic Glass", in *Materials Development and Processing – Bulk Amorphous Materials, Undercooling and Powder Metallurgy*, J. V. Wood, L. Schultz, and D. M. Herlach, eds., EUROMAT 99, vol. 8, Wiley-VCH, Weinheim, 2000, pp. 40-45.
351. A. L. McKelvey and R. O. Ritchie, "On the Temperature Dependence of the Superelastic Strength and the Prediction of the Theoretical Uniaxial Transformation Strain in Nitinol", *Philosophical Magazine A*, vol. 80 (8), 2000, pp. 1759-1768.
352. T. L. Becker, R. M. Cannon, and R. O. Ritchie, "An Approximate Method for Residual Stress Calculation in Functionally Graded Materials", *Mechanics of Materials*, vol. 32 (2), Feb. 2000, pp. 85-97.
353. C. J. Gilbert, Y. S. Han, D. K. Kim, and R. O. Ritchie, "Anomalous Cyclic Fatigue-Crack Propagation Behavior of Small Cracks in Monolithic Grain-Bridging Ceramics," *Ceramics International*, vol. 26, 2000, pp. 721-725.
354. C. J. Gilbert, D. R. Bloyer, M. W. Barsoum, T. El-Raghy, A. P. Tomsia, and R. O. Ritchie, "Fatigue-Crack Growth and Fracture Properties of Course- and Fine-Grained Ti₃SiC₂ Ceramic", *Scripta Materialia*, vol. 42 (8), April 2000, pp. 761-767.
355. R. O. Ritchie, V. Schroeder, and C. J. Gilbert, "Fracture, Fatigue and Environmentally-Assisted Failure of Zr-Based Bulk Amorphous Metal", *Intermetallics*, vol. 8 (5-6), 2000, pp. 469-475.

^{vii} 1999 C. J. Beevers Memorial Lecture, International Fatigue Congress.

356. A. L. McKelvey, K. T. Venkateswara Rao, and R. O. Ritchie, "High-Temperature Fracture and Fatigue-Crack Growth Behavior of an XD Gamma-Based Titanium Aluminide Intermetallic Alloy," *Metallurgical and Materials Transactions A*, vol. 31A (5), May 2000, pp. 1413-1423.
357. J. O. Peters, O. Roder, B. L. Boyce, A. W. Thompson, and R. O. Ritchie, "Role of Foreign Object Damage on Thresholds for High-Cycle Fatigue in Ti-6Al-4V", *Metallurgical and Materials Transactions A*, vol. 31A (6), June 2000, pp. 1571-1583.
358. D. Chen, C. J. Gilbert, X. F. Zhang, and R. O. Ritchie, "High-Temperature Cyclic Fatigue-Crack Growth Behavior in an *In Situ* Toughened Silicon Carbide Ceramic", *Acta Materialia*, vol. 48 (3), Feb. 2000, pp. 659-674.
359. A. Tatschl, C. J. Gilbert, V. Schroeder, R. Pippan, and R. O. Ritchie, "Stereo-Photogrammetric Investigation of Overload and Cyclic Fatigue Fracture Surface Morphologies in a Zr-Ti-Ni-Cu-Be Bulk Metallic Glass", *Journal of Materials Research*, vol. 15 (4), April 2000, pp. 898-903.
360. D. Chen, C. J. Gilbert, and R. O. Ritchie, "On the *In Situ* Measurement of Crack-Growth Rates during Fatigue-Crack Propagation in Silicon Carbide Ceramics at Elevated Temperatures using a DC Potential System", *ASTM Journal of Testing and Evaluation*, vol. 28 (4), July 2000, pp. 236-241.
361. D. Chen, X. F. Zhang, and R. O. Ritchie, "Effects of Grain-Boundary Structure on the Strength, Toughness and Cyclic Fatigue Properties of a Monolithic Silicon Carbide", *Journal of the American Ceramic Society*, vol. 85 (8), August 2000, pp. 2079-2081.
362. J. O. Peters and R. O. Ritchie, "Influence of Foreign Object Damage on Crack Initiation and Early Fatigue-Crack Growth in Ti-6Al-4V", *Engineering Fracture Mechanics*, vol. 67 (3), Oct. 2000, pp. 193-207.
363. J. P. Campbell and R. O. Ritchie, "Mixed-Mode, High-Cycle Fatigue-Crack Growth Thresholds in Ti-6Al-4V: Part I – A Comparison of Large and Small Crack Behavior", *Engineering Fracture Mechanics*, vol. 67 (3), Oct. 2000, pp. 209-227.
364. J. P. Campbell and R. O. Ritchie, "Mixed-Mode, High-Cycle Fatigue-Crack Growth Thresholds in Ti-6Al-4V: Part II – Quantification of Crack-Tip Shielding", *Engineering Fracture Mechanics*, vol. 67 (3), Oct. 2000, pp. 229-249.
365. D. Chen, M. E. Sixta, X. F. Zhang, L. C. De Jonghe, and R. O. Ritchie, "Role of the Grain-Boundary Phase on the Elevated-Temperature Strength, Toughness, Fatigue and Creep Resistance of Silicon Carbide Sintered with Al, B and C", *Acta Materialia*, vol. 48 (18/19), Dec. 2000, pp. 4599-4608.
366. B. Asoo, J. M. McNaney, Y. Mitamura, and R. O. Ritchie, "Cyclic Fatigue-Crack Propagation in Sapphire in Air and Simulated Physiological Environments", *Journal of Biomedical Materials Research*, vol. 52, Dec. 2000, pp. 488-491.
367. D. Chen, X.-F. Zhang, and R. O. Ritchie, "Mechanisms of High-Temperature Fatigue and Fracture in Silicon Carbide Ceramics", in *Fatigue and Fracture Behavior of High Temperature Materials*, P. K. Liaw and M. Huang, eds., TMS, Warrendale, PA, 2000, pp. 1-8.
368. J. O. Peters, B. L. Boyce, A. W. Thompson, and R. O. Ritchie, "Role of Foreign-Object Damage on High-Cycle Fatigue Thresholds in Ti-6Al-4V", in *Proceedings of the Fifth National Turbine Engine High Cycle Fatigue (HCF) Conference*, M. J. Kinsella, ed., Universal Technology Corp., Dayton, OH, 2000, CD-Rom, session 1, pp. 28-37.
369. J. P. Campbell and R. O. Ritchie, "Mixed-Mode High-Cycle Fatigue Thresholds in Turbine Engine Ti-6Al-4V", in *Proceedings of the Fifth National Turbine Engine High Cycle Fatigue (HCF) Conference*, M. J. Kinsella, ed., Universal Technology Corp., Dayton, OH, 2000, CD-Rom, session 7, pp. 35-44.

370. H. Choe, D. Chen, J. Schneibel, and R. O. Ritchie, "Fracture and Fatigue-Crack Growth Behavior in Mo-12Si-8.5B Intermetallics at Ambient and Elevated Temperatures", in *Fatigue and Fracture Behavior of High Temperature Materials*, P. K. Liaw and M. Huang, eds., TMS, Warrendale, PA, 2000, pp. 17-24.
371. K. Shirato, D. Chen, M. W. Barsoum, T. El-Raghy, and R. O. Ritchie, "High-Temperature Cyclic Fatigue-Crack Growth in Monolithic Ti₃SiC₂ Ceramics", in *Fatigue and Fracture Behavior of High Temperature Materials*, P. K. Liaw and M. Huang, eds., TMS, Warrendale, PA, 2000, pp. 71-75.
372. B. L. Boyce and R. O. Ritchie, "Effect of Load Ratio and Maximum Stress Intensity on the Fatigue Threshold in Ti-6Al-4V", *Engineering Fracture Mechanics*, vol. 68, 2001, pp. 129-147.
373. R. O. Ritchie and J. O. Peters, "Small Fatigue Cracks: Mechanics, Mechanisms and Engineering Applications", *Materials Transactions*, vol. 42 (1), 2001, pp. 58-67.
374. V. V. Panasyuk, O. Ye Andreykiv, R. O. Ritchie, and O. I. Darchuk, "Estimation of the Effects of Plasticity and Resulting Crack Closure during Small Fatigue-Crack Growth", *International Journal of Fracture*, vol. 107 (2), 2001, pp. 99-115.
375. J. P. Campbell and R. O. Ritchie, "High-Cycle Fatigue in Bimodal and Lamellar Ti-6Al-4V: Mixed-Mode Crack-Growth Thresholds", *Metallurgical and Materials Transactions A*, vol. 32A (3), March 2001, pp. 497-503.
376. A. L. McKelvey and R. O. Ritchie, "Fatigue-Crack Growth Behavior in the Superelastic and Shape-Memory Material Nitinol", *Metallurgical and Materials Transactions A*, vol. 32A (3A), Mid March 2001, pp. 731-743.
377. Yoon Soo Han, Do Kyung Kim, C. J. Gilbert, and R. O. Ritchie, "Cyclic Fatigue-Crack Propagation in Silicon Carbide: Long- and Small-Crack Behavior", *Journal of the American Ceramic Society*, vol. 84 (3), March 2001, pp. 551-554.
378. B. G. Demczyk, J. Cumings, A. Zettl, and R. O. Ritchie, "Structure of Boron Nitride Nanotubes", *Applied Physics Letters*, vol. 78 (18), April 30, 2001, pp. 2772-2774.
379. R. O. Ritchie and J. O. Peters, "Fatigue Thresholds and Early Crack Growth: Applications to Design against High-Cycle Fatigue", in *Materials Science for the 21st Century (ISMS-21)*, The Society of Materials Science, Japan, vol. A, May 2001, pp. 29-35.
380. T. L. Becker, Jr., R. M. Cannon, and R. O. Ritchie, "Finite Crack Kinking and *T*-Stresses in Functionally Graded Materials", *International Journal of Solids and Structures*, vol. 38 (32-33), Aug. 2001, pp. 5545-5563.
381. H. Choe, D. Chen, J. H. Schneibel, and R. O. Ritchie, "Ambient to High Temperature Fracture and Fatigue-Crack Propagation in a Mo-12Si-8.5B Intermetallic", *Intermetallics*, vol. 9 (4), 2001, pp. 319-329.
382. J. O. Peters, B. L. Boyce, X. Chen, J. M. McNaney, J. W. Hutchinson, and R. O. Ritchie, "Role of Residual Stresses on High-Cycle Fatigue of Impact-Damaged Ti-6Al-4V: Surface vs. Subsurface Crack Initiation", in *Proceedings of the International Conference on Fatigue in the Very High Cycle Regime*, S. E. Stanzl-Tschegg and H. M. Mayer, eds., BOKU, Vienna, Austria, 2001, pp. 129-140.
383. B. L. Boyce, X. Chen, J. W. Hutchinson, and R. O. Ritchie, "The Residual Stress State due to a Spherical Hard-Body Impact", *Mechanics of Materials*, vol. 33 (8), Aug. 2001, pp. 441-454.
384. V. Schroeder, C. J. Gilbert, and R. O. Ritchie, "A Comparison of the Mechanisms of Fatigue-Crack Propagation Behavior in a Zr-Based Bulk Amorphous Metal in Air and an Aqueous Chloride Solution", *Materials Science and Engineering A*, vol. A317, Oct. 2001, pp. 145-152.
385. J. O. Peters and R. O. Ritchie, "Foreign Object Damage and High-Cycle Fatigue: Role of Microstructure in Ti-6Al-4V", *International Journal of Fatigue*, vol. 23, 2001, pp. S413-S421.

386. J. O. Peters and R. O. Ritchie, "Foreign-Object Damage and High-Cycle Fatigue of Ti-6Al-4V", *Materials Science and Engineering A*, vol. A319-321, December 2001, pp. 597-601.
387. R. O. Ritchie, D. Chen, and X. F. Zhang, "Fatigue of Ceramics at Elevated Temperatures: Microstructural Design for Optimal Performance", *International Journal of Materials and Product Technology*, Special Issue, SPM1, vol. 1, 2001, pp. 331-341.
388. C. L. Muhlstein, S. Brown and R. O. Ritchie, "High-Cycle Fatigue of Single Crystal Silicon Thin Films", *Journal of Microelectromechanical Systems*, vol. 10 (4), Dec. 2001, pp. 593-600.
389. D. Chen, K. Shirato, M. W. Barsoum, T. El-Raghy, and R. O. Ritchie, "Cyclic Fatigue-Crack Growth and Fracture Properties in Ti_3SiC_2 Ceramics at Elevated Temperatures", *Journal of the American Ceramic Society*, vol. 84 (12), Dec. 2001, pp. 2914-2920.
390. C. L. Muhlstein, S. B. Brown and R. O. Ritchie, "High-Cycle Fatigue and Durability of Polycrystalline Silicon Thin Films in Ambient Air", *Sensors and Actuators A*, vol. 94 (3), Nov. 2001, 177-188.
391. R. K. Nalla, J. P. Campbell, and R. O. Ritchie, "Mixed-Mode High-Cycle Fatigue Thresholds in Ti-6Al-4V: A Comparison of Large and Small Crack Behavior" in *Proceedings of the Sixth International Conference on Biaxial/Multiaxial Fatigue and Fracture*, Lisbon, Portugal, M. de Freitas, ed., 2001.
392. C. L. Muhlstein, S. B. Brown and R. O. Ritchie, "High-Cycle Fatigue of Polycrystalline Silicon Thin Films in Laboratory Air", in *Materials Science of Microelectromechanical Systems (MEMS) Devices III, MRS Symposium Proceedings*, H. Kahn, M. deBoer, M. Judy, and S. M. Spearing, eds., vol. 657, Materials Research Society, Warrendale, PA, 2001, pp. EE5.8.1-6.
393. J. J. Kruzic, J. M. McNaney, R. M. Cannon, and R. O. Ritchie, "Time-Dependent Debonding of Aluminum-Alumina Interfaces under Cyclic and Static Loading", in *Structure-Property Relationships of Oxide Surfaces and Interfaces, MRS Symposium Proceedings*, C. B. Carter, X. Pan, K. Sickafus, H. L. Tuller, and T. E. Wood, eds., vol. 654, Materials Research Society, Warrendale, PA, 2001, pp. AA4.10.1-6.
394. J. H. Schneibel, D. S. Easton, H. Choe, and R. O. Ritchie, "Fracture Toughness, Creep Strength and Oxidation of Mo-Mo₃Si-Mo₅SiB₂ Molybdenum Silicides", in *Structural Intermetallics, Proceedings of the Third International Symposium on Structural Intermetallics*, K. J. Hemker and D. M. Dimiduk, eds., TMS, Warrendale, PA, 2001, pp. 801-809.
395. O. Ye Andreykiv, V. V. Panasyuk, R. O. Ritchie, and O. I. Darchuk, "Modelling of Plastic Effects during Small Fatigue-Crack Growth", in *Advances in Fracture Research, Proceedings of the Tenth International Conference on Fracture*, K. Ravi-Chandar, B. L. Karihaloo, T. Kishi, R. O. Ritchie, A. T. Yokobori, Jr., and T. Yokobori, eds., Pergamon Press, Oxford, U.K., 2001, CD-Rom.
396. J. O. Peters, B. L. Boyce, J. M. McNaney, and R. O. Ritchie, "Foreign Object Damage and High-Cycle Fatigue Thresholds in Ti-6Al-4V", in *Advances in Fracture Research, Proceedings of the Tenth International Conference on Fracture*, K. Ravi-Chandar, B. L. Karihaloo, T. Kishi, R. O. Ritchie, A. T. Yokobori, Jr., and T. Yokobori, eds., Pergamon Press, Oxford, U.K., 2001, CD-Rom.
397. I. Altenberger, B. Scholtes, U. Noster, and R. O. Ritchie, "Characterization of Fatigue Crack Formation in Mechanically Surface Treated Austenitic Stainless Steels", in *Advances in Fracture Research, Proceedings of the Tenth International Conference on Fracture*, K. Ravi-Chandar, B. L. Karihaloo, T. Kishi, R. O. Ritchie, A. T. Yokobori, Jr., and T. Yokobori, eds., Pergamon Press, Oxford, U.K., 2001, CD-Rom.
398. B. L. Boyce, X. Chen, J. W. Hutchinson, and R. O. Ritchie, "FOD Characterization by Mesoscale Synchrotron X-Ray Diffraction", in *Proceedings of the Sixth National Turbine Engine High Cycle Fatigue (HCF) Conference*, M. J. Kinsella, ed., Universal Technology Corp., Dayton, OH, 2001, CD-Rom, section 8.

399. J. O. Peters, B. L. Boyce, J. M. McNaney, X. Chen, J. W. Hutchinson, and R. O. Ritchie, "Foreign-Object Damage and High-Cycle Fatigue in Ti-6Al-4V", in *Proceedings of the Sixth National Turbine Engine High Cycle Fatigue (HCF) Conference*, M. J. Kinsella, ed., Universal Technology Corp., Dayton, OH, 2001, CD-Rom, section 8.
400. W. Cheng, I. Finnie, and R. O. Ritchie, "Residual Stress Measurement on Pyrolytic Carbon-Coated Graphite Leaflets for Cardiac Valve Prostheses", *Proceedings of the 2001 SEM Annual Conference*, Portland, OR, Society for Experimental Mechanics, Bethel, CN, 2001.
401. G. Y. Lee, C. K. H. Dharan, and R. O. Ritchie, "A Physically-Based Abrasive Wear Model for Composite Materials", *Wear*, vol. 252, 2002, pp. 322-331.
402. R. K. Nalla, B. L. Boyce, J. P. Campbell, J. O. Peters, and R. O. Ritchie, "Influence of Microstructure on the High-Cycle Fatigue of Ti-6Al-4V: Bimodal vs. Lamellar Structures", *Metallurgical and Materials Transactions A*, vol. 33A (3), mid-March 2002, pp. 899-918.
403. A. Ziegler, C. Kisielowski, and R. O. Ritchie, "Imaging of the Crystal Structure of Silicon Nitride at 0.8Ångström Resolution", *Acta Materialia*, vol. 50 (3), Feb. 2002, pp. 565-574.
404. C. L. Muhlstein, E. A. Stach and R. O. Ritchie, "Mechanism of Fatigue in Micron-Scale Films of Polycrystalline Silicon for Microelectromechanical Systems", *Applied Physics Letters*, vol. 80 (9), Mar. 4, 2002, pp. 1532-1534. (also *Virtual Journal of Nanoscale Science & Technology*, vol. 5 (10), March 11, 2002).
405. R. K. Nalla, J. P. Campbell and R. O. Ritchie, "Effects of Microstructure on Mixed-Mode, High-Cycle Fatigue Crack Growth Thresholds in Ti-6Al-4V", *Fatigue & Fracture of Engineering Materials & Structures*, vol. 25 (6), June 2002, pp. 587-606.
406. J. O. Peters, B. L. Boyce, X. Chen, J. M. McNaney, J. W. Hutchinson, and R. O. Ritchie, "On the Application of the Kitagawa-Takahashi Diagram to Foreign-Object Damage and High-Cycle Fatigue", *Engineering Fracture Mechanics*, vol. 69 (13), Sept. 2002, pp. 1425-1446.
407. R. K. Nalla, J. P. Campbell and R. O. Ritchie, "Mixed-Mode High-Cycle Fatigue Crack Growth Thresholds in Ti-6Al-4V: Role of Small Cracks", *International Journal of Fatigue*, vol. 24 (10), Oct. 2002, pp. 1047-1062.
408. C. L. Muhlstein, E. A. Stach and R. O. Ritchie, "On the Mechanism of Fatigue in Micron-Scale Structural Films of Polycrystalline Silicon", in *Surface Engineering 2001 – Fundamentals and Applications*, MRS Symposium Proceedings, Jin Meng Wen, A. Kemar, G. L. Doll, Y.-T. Cheng, S. Veprek, and T.-W. Chung, eds., vol. 697, Materials Research Society, Warrendale, PA, 2002, pp. 227-234.
409. Da Chen, J. M. McNaney, E. Saiz, A. P. Tomsia, and R. O. Ritchie, "Stress Corrosion Crack Growth Behavior of Titanium Alloy/Bioactive Glasses Sandwiches in Simulated Human Physiological Environment", *Journal of Materials Science and Technology*, vol. 18 (5), Sept. 2002, pp. 387-391.
410. T. L. Becker, Jr., R. M. Cannon, and R. O. Ritchie, "Statistical Fracture Modeling: Crack Path and Fracture Criteria with Application to Homogeneous and Functionally Graded Materials", *Engineering Fracture Mechanics*, vol. 69 (14-16), Sept. 2002, pp. 1521-1555.
411. C. L. Muhlstein, E. A. Stach and R. O. Ritchie, "A Reaction-Layer Mechanism for the Delayed Failure of Micron-Scale Polycrystalline Silicon Structural Films Subjected to High-Cycle Fatigue Loading", *Acta Materialia*, vol. 50, 2002, pp. 3579-3595.
412. B. G. Demczyk, Y. M. Yang, J. Cumings, M. Hetman, W. Han, A. Zettl, and R. O. Ritchie, "Direct Mechanical Measurement of the Tensile Strength and Elastic Modulus of Multiwalled Carbon Nanotubes", *Materials Science and Engineering A*, vol. A334, Sept. 2002, pp. 173-178.
413. J. J. Kruzic, R. A. Marks, M. Yoshiya, A. M. Glaeser, R. M. Cannon, and R. O. Ritchie, "Fracture and Fatigue Behavior at Ambient and Elevated Temperatures of Alumina Bonded with Copper/Niobium/Copper Interlayers", *Journal of the American Ceramic Society*, vol. 85 (10), Oct. 2002, pp. 2531-2541.

414. C. L. Muhlstein, W. R. Ashurst, E. A. Stach, R. Maboudian, and R. O. Ritchie, "Surface Engineering of Polycrystalline Silicon Microelectromechanical Systems for Fatigue Resistance", in *BioMEMS and Bionanotechnology*, MRS Symposium Proceedings, R. P. Manginell, J. T. Borenstein, L. P. Lee, and P. J. Hesketh, eds., vol. 729, Materials Research Society, Warrendale, PA, 2002, pp. 41-46.
415. J. O. Peters, G. Lütjering, R. K. Nalla, I. Altenberger, and R. O. Ritchie, "High Cycle Fatigue of Beta Titanium Alloys", in *Fatigue 2002*, Proceedings of the Eighth International Fatigue Congress, A. F. Blom, ed., EMAS, Cradley Heath, West Midlands, UK, 2002, vol. 3, pp. 1763-1772.
416. I. Altenberger, U. Noster, B. Scholtes, and R. O. Ritchie, "Fatigue of Mechanical Surface Treated Materials at Elevated Temperatures", in *Fatigue 2002*, Proceedings of the Eighth International Fatigue Congress, A. F. Blom, ed., EMAS, Cradley Heath, West Midlands, UK, 2002, vol. 4, 2425-2436.
417. C. L. Muhlstein, E. A. Stach, and R. O. Ritchie, "High Cycle Fatigue of Silicon Thin Films: Role of the SiO₂ Reaction Layer", in *Fatigue 2002*, Proceedings of the Eighth International Fatigue Congress, A. F. Blom, ed., EMAS, Cradley Heath, UK, 2002, vol. 5, pp. 3435-3446.
418. R. K. Nalla, J. P. Campbell and R. O. Ritchie, "Mixed-Mode, High-Cycle Fatigue in Ti-6Al-4V", in *The David L. Davidson Symposium on Fatigue*, K. S. Chan, P. K. Liaw, R. S. Bellows, T. Zogas, and W. O. Soboyejo, eds., TMS, Warrendale, PA, 2002, pp. 75-90.
419. R. K. Nalla and R. O. Ritchie, "Role of Crack Size and Microstructure in Influencing Mixed-Mode High-Cycle Fatigue Thresholds in Ti-6Al-4V", in *Proceedings of the Seventh National Turbine Engine High Cycle Fatigue (HCF) Conference*, C. Burns, ed., Universal Technology Corp., Dayton, OH, 2002, CD-Rom.
420. I. Altenberger, R. K. Nalla, U. Noster, B. Scholtes, and R. O. Ritchie, "On the Fatigue Behavior and Associated Effect of Residual Stresses in Deep-Rolled and Laser Shock Peened Ti-6Al-4V Alloys at Ambient and Elevated Temperatures", in *Proceedings of the Seventh National Turbine Engine High Cycle Fatigue (HCF) Conference*, C. Burns, ed., Universal Technology Corp., Dayton, OH, 2002, CD-Rom.
421. I. Altenberger, U. Noster, B. L. Boyce, J. O. Peters, B. Scholtes, and R. O. Ritchie, "Effects of Mechanical Surface Treatment on Fatigue Failure in Ti-6Al-4V: Role of Residual Stresses and Foreign-Object Damage", *Materials Science Forum*, vol. 404-407, 2002, pp. 457-462.
422. H. Choe, J. H. Schneibel, and R. O. Ritchie, "On the Fracture and Fatigue Properties of Mo-Mo₃Si-Mo₅SiB₂ Refractory Intermetallic Alloys at Ambient to Elevated Temperatures (25°C-1300°C)", *Metallurgical and Materials Transactions A*, vol. 34A (2), Feb. 2003, pp. 225-239.
423. R. K. Nalla, J. H. Kinney, and R. O. Ritchie, "Mechanistic Fracture Criteria for the Failure of Human Cortical Bone", *Nature Materials*, vol. 2, March 2003, pp. 164-168.
424. I. Altenberger, E. A. Stach, G. Liu, R. K. Nalla, and R. O. Ritchie, "An *In Situ* Study of the Thermal Stability of Near-Surface Microstructures Induced by Deep Rolling and Laser-Shock Peening", *Scripta Materialia*, vol. 48 (12), June 2003, pp. 1593-1598.
425. V. Imbeni, R. K. Nalla, C. Bosi, J. H. Kinney, and R. O. Ritchie, "*In Vitro* Fracture Toughness of Human Dentin", *Journal of Biomedical Materials Research A*, vol. 66A (1), July, 2003, pp. 1-9.
426. R. K. Nalla, V. Imbeni, J. H. Kinney, M. Staninec, S. J. Marshall, and R. O. Ritchie, "On the *In Vitro* Fatigue Behavior of Human Dentin with Applications for Life Prediction", *Journal of Biomedical Materials Research A*, vol. 66A (1), July, 2003, pp. 10-20.
427. B. L. Boyce, X. Chen, J. O. Peters, J. W. Hutchinson, and R. O. Ritchie, "Mechanical Relaxation of Localized Residual Stresses Associated with Foreign Object Damage", *Materials Science and Engineering A*, vol. 349 (1-2), May 2003, pp. 48-58.

428. X. F. Zhang, G. Y. Lee, Da Chen, R. O. Ritchie, and L. C. De Jonghe, "Abrasive Wear Behavior of Heat-Treated ABC-Silicon Carbide", *Journal of the American Ceramic Society*, vol. 86 (8), Aug. 2003, pp. 1370-1378.
429. I. Altenberger, R. K. Nalla, U. Noster, G. Liu, B. Scholtes and R. O. Ritchie, "Verhalten Laserschockverfestigter und Festgewalzter Randschichten der Ti-Legierung Ti-6Al-4V bei Schwingender Beanspruchung unter Erhöhten Temperaturen (Residual stress stability and near-surface microstructures in high temperature fatigued mechanically surface treated Ti-6Al-4V)", *Materialwissenschaft und Werkstofftechnik*, vol. 34, 2003, pp. 529-541.
430. J. J. Kruzic and R. O. Ritchie, "Determining the Toughness of Ceramics from Vickers Indentations using the Crack-Opening Displacements: An Experimental Study", *Journal of the American Ceramic Society*, vol. 86 (8), Aug. 2003, pp. 1433-1436.
431. J. M. McNaney, V. Imbeni, Y. Jung, P. Papadopoulos, and R. O. Ritchie, "An Experimental Study of the Superelastic Effect in a Shape-Memory Nitinol Alloy under Biaxial Loading", *Mechanics of Materials*, vol. 35 (10), Oct. 2003, pp. 969-986.
432. A. Ziegler, C. Kisielowski, M. Hoffmann, and R. O. Ritchie, "Atomic-Resolution Transmission Electron Microscopy of a Y₂O₃-Containing Silicon Nitride Ceramic", *Journal of the American Ceramic Society*, vol. 86 (10), Oct. 2003, pp. 1777-1785.
433. I. Milne, B. Karihaloo, and R. O. Ritchie, "Structural Integrity Assurance", in *Comprehensive Structural Integrity*, I. Milne, R. O. Ritchie, and B. Karihaloo, eds., Vol. 1 (*Structural Integrity Assessment – Examples and Case Studies*), Elsevier, Oxford, U.K., 2003, pp. 1-24.
434. R. O. Ritchie, "Fatigue of Brittle Materials", in *Comprehensive Structural Integrity*, I. Milne, R. O. Ritchie, and B. Karihaloo, eds., Vol. 4 (*Cyclic Loading and Fatigue*), Elsevier, Oxford, U.K., 2003, pp. 359-388.
435. C. L. Muhlstein and R. O. Ritchie, "Fatigue of Small-Volume Structures: Silicon Films", in *Comprehensive Structural Integrity*, I. Milne, R. O. Ritchie, and B. Karihaloo, eds., Vol. 4 (*Cyclic Loading and Fatigue*), Elsevier, Oxford, U.K., 2003, pp. 467-487.
436. C. L. Muhlstein and R. O. Ritchie, "High-Cycle Fatigue of Micron-Scale Polycrystalline Silicon Films: Fracture Mechanics Analysis of the Role of the Silicon/Silica Interface", *International Journal of Fracture*, vol. 119/120, 2003, pp. 449-474.
437. R. K. Nalla, J. H. Kinney, and R. O. Ritchie, "Effect of Orientation on the *In Vitro* Fracture Toughness of Dentin: The Role of Toughening Mechanisms", *Biomaterials*, vol. 24 (22), Oct. 2003, pp. 3955-3968.
438. R. K. Nalla, J. H. Kinney, and R. O. Ritchie, "On the Fracture of Human Dentin: Is It Stress- or Strain-Controlled", *Journal of Biomedical Materials Research A*, vol. 67A (2), Nov. 2003, pp. 484-495.
439. R. K. Nalla, I. Altenberger, U. Noster, G. Y. Liu, B. Scholtes, and R. O. Ritchie, "On the Influence of Mechanical Surface Treatments – Deep Rolling and Laser Shock Peening – on the Fatigue Behavior of Ti-6Al-4V at Ambient and Elevated Temperatures", *Materials Science and Engineering A*, vol. 355 (1-2), 2003, pp. 216-230.
440. J. J. Kruzic, R. Yuan, R. M. Cannon, and R. O. Ritchie, "Determining Worst-Case Thresholds for Grain-Bridging Ceramics", in *Materials Lifetime Science and Engineering*, P. K. Liaw, R. A. Buchanan, D. L. Klarstrom, R. P. Wei, and D. G. Harlow, eds., TMS, Warrendale, PA, 2003, pp. 61-68.
441. R. K. Nalla, V. Imbeni, J. H. Kinney, S. J. Marshall, and R. O. Ritchie, "On the Development of Life-Prediction Methodologies for the Failure of Human Teeth", in *Materials Lifetime Science and Engineering*, P. K. Liaw, R. A. Buchanan, D. L. Klarstrom, R. P. Wei, and D. G. Harlow, eds., TMS, Warrendale, PA, 2003, pp. 137-145.

442. L. C. De Jonghe, R. O. Ritchie, and X. F. Zhang, "Microstructure and Properties of *In Situ* Toughened Silicon Carbide", in *Nano and Microstructural Design of Advanced Materials*, M. A. Meyers, R. O. Ritchie, and M. Sarikaya, eds., Elsevier, Oxford, U.K., 2003, pp. 145-156.
443. C. L. Muhlstein, E. A. Stach, and R. O. Ritchie, "Interfacial Effects on the Premature Failure of Polycrystalline Silicon Structural Films", in *Nano- and Microelectromechanical Systems (MEMS and NEMS) and Molecular Machines*, MRS Symposium Proceedings, A. LaVan, A. Ayón, T. Buchheit, D. and M. Madou, eds., vol. 741, Materials Research Society, Warrendale, PA, 2003, pp. J.3.5.1-6.
444. C. L. Muhlstein, E. A. Stach, and R. O. Ritchie, "Fatigue Degradation of Nanometer-Scale Silicon Dioxide Reaction Layers on Silicon Structural Films", in *Mechanical Properties Derived from Nanostructuring Materials*, MRS Symposium Proceedings, D. F. Bahr, H. H. Kung, N. R. Moody, and K. J. Wahl, eds., vol. 778, Materials Research Society, Warrendale, PA, 2003, pp. 215-220.
445. B. C. Regan, S. Aloni, B. Huard, A. Fennimore, R. O. Ritchie, and A. Zettl, "Nanowicks: Nanotubes as Tracks for Mass Transfer", *American Institute of Physics Conference Proceedings* vol. 685(1), Oct. 2003, pp. 612-615.
446. A. Ziegler, C. Kisielowski, M. J. Hoffmann, and R. O. Ritchie, "Effects of the Amorphous Oxide Intergranular Layer Structure and Bonding on the Fracture Toughness of a High Purity Silicon Nitride", in *Structure-Property Relationships of Oxide Surfaces and Interfaces II*, MRS Symposium Proceedings, K. B. Alexander, C. B. Carter, R. W. Grimes, X. Pan, and T. Wood, eds., vol. 751, Materials Research Society, Warrendale, PA, 2003, pp. Z4.11.1-6.
447. J. H. Schneibel, P. F. Tortorelli, M. J. Kramer, A. J. Thom, R. O. Ritchie, and J. J. Kruzic, "Optimization of Mo-Si-B Intermetallics", in *Defect Properties and Related Phenomena in Intermetallic Alloys*, MRS Symposium Proceedings, E. P. George, M. J. Mills, H. Inui, and G. Eggeler, eds., vol. 753, Materials Research Society, Warrendale, PA, 2003, pp. BB2.2.1-6.
448. J. H. Schneibel, J. J. Kruzic and R. O. Ritchie, "Mo-Si-B Alloy Development", *Proceedings of the 17th Annual Fossil Energy Materials Conference*, April 22-24, 2003, Baltimore, MA, published by the National Energy Technology Laboratory at <http://www.netl.doe.gov>, 2003.
449. S. W. Robertson, V. Imbeni, E. Notkina, H.-R. Wenk, and R. O. Ritchie, "Texture in Tubes and Plates of the Superelastic/Shape-Memory Alloy Nitinol", in *SMST-2003, Proceedings of the International Conference on Shape Memory and Superelastic Technologies*, A. R. Pelton and T. Duerig, eds., SMST Society, Inc., Menlo Park, CA, 2003, pp. 341-347.
450. R. O. Ritchie, C. L. Muhlstein, and R. K. Nalla, "On the Fatigue and Fracture of "Nano" and "Bio" Materials", *Proceedings of the International Conference on Advanced Technology in Experimental Mechanics 2003 (ATEM'03)*, Y. Akiniwa, H. Kimura, and K. Tanaka, eds., Japan Society of Mechanical Engineers, CD Rom, 2003.
451. I. Altenberger, R. K. Nalla, U. Noster, G. Liu, B. Scholtes and R. O. Ritchie, "Effects of Deep Rolling on the Fatigue Behavior of Ti-6Al-4V at Ambient and Elevated Temperatures", *Proceedings of 10th World Congress on Titanium – 2003 (Ti-2003)*, G. Lütjering, ed., Wiley-VCH, Weinheim, Germany, 2003.
452. V. Imbeni, A. Mehta, S. W. Robertson, T. W. Duerig, A. R. Pelton, and R. O. Ritchie, "On the Mechanical Behavior of Nitinol under Multiaxial Loading Conditions and *In Situ* Synchrotron X-Ray", in *SMST-2003, Proceedings of the International Conference on Shape Memory and Superelastic Technologies*, A. R. Pelton and T. Duerig, eds., SMST Society, Inc., Menlo Park, CA, 2003, pp. 267-276.
453. C. L. Muhlstein, E. A. Stach, and R. O. Ritchie, "Fatigue Problems of the Future: High-Cycle Fatigue Failures of Silicon MEMS", *Journal of the Engineering Integrity Society*, vol. 14, July 2003, pp. 4-12.

454. J. J. Kruzic, R. K. Nalla, J. H. Kinney, and R. O. Ritchie, "Crack Blunting, Crack Bridging and Resistance-Curve Fracture Mechanics of Dentin: Effect of Hydration", *Biomaterials*, vol. 24 (28), Dec. 2003, pp. 5209-5221.
455. R. Yuan, J. J. Kruzic, X. F. Zhang, L. C. De Jonghe, and R. O. Ritchie, "Ambient to High-Temperature Fracture Toughness and Cyclic Fatigue Behavior in Al-Containing Silicon Carbide Ceramics", *Acta Materialia*, vol. 51 (20), Dec. 2003, pp. 6477-6491.
456. C. W. Chang, B. C. Regan, W. Mickelson, R. O. Ritchie, and A. Zettl, "Probing Structural Phase Transitions of Crystalline C₆₀ via Resistivity Measurements of Metal Film Overlayers", *Solid State Communications*, vol. 128 (9-10), Dec. 2003, pp. 359-363.
457. J. Stankiewicz, S. W. Robertson, X. Y. Gong, H.-R. Wenk, and R. O. Ritchie, "Effects of Texture on the Fatigue Resistance of Nitinol", *Proceedings of the 2004 10th SEM Annual Conference*, Costa Mesa, CA, Society for Experimental Mechanics, Bethel, CN, 2004, Paper No. 453 (CD Rom).
458. E. A. Stach, V. Gopal, M. Jin, D. H. Alsem, M. J. Williamson, A. Minor, V. Radmilovic, C. L. Muhlstein, J. W. Morris, Jr., and R. O. Ritchie, "Using the Electron Microscope to Explore Reliability in Microelectromechanical Systems and Nanostructured Materials", *Microscopy and Microanalysis*, vol. 10 (SO2), 2004. pp. 354-355.
459. J. H. Schneibel, J. J. Kruzic, and R. O. Ritchie, "Mo-Si-B Alloy Development", *Proceedings of the 18th Annual Fossil Energy Materials Conference*, 2004, published on the web by the National Energy Technology Laboratory at <http://www.netl.doe.gov>, 2004.
460. R. K. Nalla, J. J. Kruzic, J. H. Kinney, and R. O. Ritchie, "Mechanistic Aspects of Fracture of Human Cortical Bone", in *Biological and Bio-Inspired Materials and Devices*, MRS Symposium Proceedings, J. Aizenberg, W. J. Landis, C. Orme, and R. Wang, eds., vol. 823, Materials Research Society, Warrendale, PA, 2004, pp. 91-96.
461. D. H. Alsem, E.A. Stach, C.L. Muhlstein, M.T. Dugger, and R.O. Ritchie, "Utilizing On-Chip Testing and Electron Microscopy to Study Fatigue and Wear in Polysilicon Structural Films", in *Nanoscale Materials and Modeling – Relations Among Processing, Microstructure, and Mechanical Properties*, MRS Symposium Proceedings, P. Anderson, T. Foecke, A. Misra, and R. E. Rudd, eds., vol. 821, Materials Research Society, Warrendale, PA, 2004, pp. 331-336.
462. R. O. Ritchie, X.-F. Zhang, and L. C. De Jonghe, "On the Role of Grain-Boundary Films in Optimizing the Mechanical Properties of Silicon Carbide Ceramics", in *Interfacial Engineering for Optimized Properties III*, MRS Symposium Proceedings, C. Schuh, M. Kumar, C. B. Carter and V. Randle, eds., vol. 819, Materials Research Society, Warrendale, PA, 2004, pp. 3-14.
463. J. J. Kruzic, R. M. Cannon, and R. O. Ritchie, "Crack-Size Effects on Cyclic and Monotonic Crack Growth Behavior in Polycrystalline Alumina: Quantification of the Role of Grain Bridging", *Journal of the American Ceramic Society*, vol. 87 (1), Jan. 2004, pp. 93-103.
464. C. L. Muhlstein, R. T. Howe, and R. O. Ritchie, "Fatigue of Polycrystalline Silicon for Microelectromechanical Systems: Crack Growth and Stability under Resonant Loading Conditions", *Mechanics of Materials*, vol. 36 (1-2), Jan.-Feb. 2004, pp. 13-33.
465. J. J. Kruzic, J. M. McNaney, R. M. Cannon, and R. O. Ritchie, "Effects of Plastic Constraint on the Cyclic and Static Fracture Behavior of Metal/Ceramic Layered Structures", *Mechanics of Materials*, vol. 36 (1-2), Jan.-Feb. 2004, pp. 57-72.
466. J. J. Kruzic, J. H. Schneibel, and R. O. Ritchie, "Fracture and Fatigue Resistance of Mo-Si-B Alloys for Ultrahigh-Temperature Structural Applications", *Scripta Materialia*, vol. 50 (4), March 2004, pp. 459-464.
467. R. K. Nalla, J. H. Kinney, S. J. Marshall, and R. O. Ritchie, "On the *In Vitro* Fatigue Behavior of Human Dentin: Effect of Mean Stress", *Journal of Dental Research*, vol. 83 (3), 2004, pp. 211-215.

468. J. J. Kruzic and R. O. Ritchie, "An Experimental Assessment of the Use of Crack-Opening Displacements to Determine Indentation Toughness from Vickers Indents", *Ceramic Transactions*, vol. 156, 2004, pp. 83-91.
469. Y. Jung, P. Papadopoulos, and R. O. Ritchie, "Constitutive Modelling and Numerical Simulation of Multivariant Phase Transformation in Superelastic Shape-Memory Alloy", *International Journal of Numerical Methods in Engineering*, vol. 60 (2), May 2004, pp. 429-460.
470. R. O. Ritchie, D. H. Alsem, C. L. Muhlstein and E. A. Stach, "Very High-Cycle Fatigue of Micron-Scale Polysilicon Films for MEMS", in *Very High Cycle Fatigue*, T. Sakai and Y. Ochi, eds., Society of Materials Science, Japan, 2004, pp. 68-76.
471. V. Imbeni, R. O. Ritchie, T. Duerig, and A. Pelton, "Multiaxial Loading and *In Situ* X-Ray Diffraction of a NiTi Shape Memory Alloy for Biomedical Applications", in *Medical Device Materials*, Proceedings of the Materials and Processes for Medical Devices Conference, S. Shrivastava, ed., ASM Int., Materials Park, OH, 2004, pp. 209-214.
472. B. C. Regan, S. Aloni, R. O. Ritchie, U. Dahmen, and A. Zettl, "Carbon Nanotubes as Nanoscale Mass Conveyors", *Nature*, vol. 428, 29 April 2004, pp. 924-927.
473. R. K. Nalla, J. J. Kruzic, and R. O. Ritchie, "On the Origin of Toughness of Mineralized Tissue: Microcracking or Uncracked-Ligament Bridging", *Bone*, vol. 34 (5), May 2004, pp. 790-798.
474. R. O. Ritchie, C. L. Muhlstein, and R. K. Nalla, "Failure by Fracture and Fatigue in "Nano" and "Bio" Materials", *JSME International Journal, Series A*, vol. 47 (3), July 2004, pp. 238-251.
475. A. Mehta, V. Imbeni, R. O. Ritchie, and T. W. Duerig, "On the Electronic and Mechanical Instabilities in Ni_{50.9}Ti_{49.1}", *Materials Science and Engineering A*, vol. 378 (1-2), July 2004, pp. 130-137.
476. R. O. Ritchie, J. J. Kruzic, C. L. Muhlstein, R. K. Nalla, and E. A. Stach, "Characteristic Dimensions and the Micro-Mechanisms of Fracture and Fatigue in 'Nano' and 'Bio' Materials", *International Journal of Fracture*, vol. 128 (1), July-Aug. 2004, pp. 1-15.
477. J. J. Kruzic, R. K. Nalla, R. O. Ritchie, and J. H. Kinney, "Fracture Properties of Cortical Bone and Dentin", *Ceramic Transactions*, vol. 164, 2004, pp. 53-62.
478. B. L. Boyce, A. Mehta, J. O. Peters, and R. O. Ritchie, "A Spatially-Resolved Synchrotron Diffraction Method for Evaluating Impact-induced Residual Stresses", *Journal of Neutron Research*, vol. 12, 2004, pp. 75-80.
479. A. Ziegler, J. C. Idrobo, M. K. Cinibulk, C. Kisielowski, N. D. Browning, and R. O. Ritchie, "Interface Structure and Atomic Bonding Characteristics in Silicon Nitride Ceramics", *Science*, vol. 306 (5702), Dec. 3, 2004, pp. 1768-1770.
480. R. K. Nalla, J. J. Kruzic, J. H. Kinney, and R. O. Ritchie, "Effect of Aging on the Toughness of Human Cortical Bone: Evaluation by R-Curves", *Bone*, vol. 35 (6), Dec. 2004, pp. 1240-1246.
481. R. K. Nalla, M. Balooch, J. W. Ager, J. J. Kruzic, J. H. Kinney, and R. O. Ritchie, "Effects of Polar Solvents on the Fracture Resistance of Dentin: Role of Water Hydration", *Acta Biomaterialia*, vol. 1 (1), Jan. 2005, pp. 31-43.
482. R. K. Nalla, J. J. Kruzic, J. H. Kinney, and R. O. Ritchie, "Mechanistic Aspects of Fracture and R-Curve Behavior in Human Cortical Bone", *Biomaterials*, vol. 26 (2), Jan. 2005, pp. 217-231.
483. D. H. Alsem, E. A. Stach, C. L. Muhlstein, and R. O. Ritchie, "Fatigue Failure in Thin-Film Polysilicon is due to Subcritical Cracking within the Oxide Layer", *Applied Physics Letters*, vol. 86 (4), Jan. 24, 2005, pp. 041914-1-3.
484. S. W. Robertson, V. Imbeni, H.-R. Wenk, and R. O. Ritchie, "Crystallographic Texture for Tube and Plate of the Superelastic/Shape-Memory Alloy Nitinol Used for Endovascular Stents", *Journal of Biomedical Materials Research A*, vol. 72A (2), Feb. 2005, pp. 190-199.

485. V. Imbeni, J. J. Kruzic, G. W. Marshall, S. J. Marshall, and R. O. Ritchie, "The Dentin-Enamel Junction and the Fracture of Human Teeth", *Nature Materials*, vol. 4 (3), March 2005, pp. 229-232.
486. J. H. Schneibel, R. O. Ritchie, J. J. Kruzic, and P. R. Tortorelli, "Optimization of Mo-Si-B Intermetallic Alloys", *Metallurgical and Materials Transactions A*, vol. 36A (3), March 2005, pp. 525-531.
487. M. Staninec, R. K. Nalla, J. F. Hilton, R. O. Ritchie, L. G. Watanabe, G. Nonomura, G. W. Marshall, and S. J. Marshall, "Dentin Erosion Simulation by Cantilever-Beam Fatigue and pH Change", *Journal of Dental Research*, vol. 84 (4), 2005, pp. 371-375.
488. J. J. Kruzic, R. K. Nalla, J. H. Kinney, and R. O. Ritchie, "Mechanistic Aspects of *In Vitro* Fatigue-Crack Growth in Dentin", *Biomaterials*, vol. 26 (10), April 2005, pp. 1195-1204.
489. ^{viii}R. O. Ritchie, J. H. Kinney, J. J. Kruzic, and R. K. Nalla, "A Fracture Mechanics and Mechanistic Approach to the Failure of Cortical Bone", *Fatigue & Fracture of Engineering Materials & Structures*, vol. 28 (4), April 2005, pp. 345-372.
490. J. J. Kruzic, R. M. Cannon, J. W. Ager III, and R. O. Ritchie, "Fatigue Threshold R-Curves for Predicting the Reliability of Ceramics under Cyclic Loading Conditions", *Acta Materialia*, vol. 53 (9), April 2005, pp. 2595-2605.
491. R. O. Ritchie, "Incomplete Similarity and Fatigue-Crack Growth", *International Journal of Fracture*, vol. 132 (3), April 2005, pp. 197-203.
492. R. K. Nalla, J. J. Kruzic, J. H. Kinney, and R. O. Ritchie, "Aspects of *In Vitro* Fatigue-Crack Growth in Human Cortical Bone: Time- and Cycle-Dependent Crack Growth", *Biomaterials*, vol. 26 (14), May 2005, pp. 2183-2195.
493. J. H. Kinney, R. K. Nalla, J. A. Pople, T. M. Breunig, and R. O. Ritchie, "Age-Related Transparent Root Dentin: Mineral Concentration, Crystallite Size, and Mechanical Properties", *Biomaterials*, vol. 26 (16), June 2005, pp. 3363-3376.
494. J. W. Ager III, R. K. Nalla, K. L. Breeden, and R. O. Ritchie, "Deep-Ultraviolet Raman Spectroscopy Study of the Effect of Aging on Human Cortical Bone", *Journal of Biomedical Optics*, vol. 10 (3), May/June 2005, pp. 034012.
495. J. J. Kruzic, S. J. Kuskowski, and R. O. Ritchie, "Simple and Accurate Fracture Toughness Testing Methods for Pyrolytic Carbon/Graphite Composites used in Heart-Valve Prostheses", *Journal of Biomedical Materials Research A*, vol. 74A (3), 2005, pp. 461-464.
496. J. H. Schneibel, M. P. Brady, J. J. Kruzic, and R. O. Ritchie, "On the Improvement of the Ductility of Molybdenum by Spinel ($MgAl_2O_4$) Particles", *Zeitschrift für Metallkunde*, vol. 96 (6), June 2005, pp. 632-637.
497. R. K. Nalla, J. S. Stölken, J. H. Kinney, and R. O. Ritchie, "Fracture in Human Cortical Bone: Local Fracture Criteria and Toughening Mechanisms", *Journal of Biomechanics*, vol. 38 (7), July 2005, pp. 1517-1525.
498. A. Ziegler, J. M. McNaney, M. J. Hoffmann, and R. O. Ritchie, "On the Effect of Local Grain-Boundary Chemistry on the Macroscopic Mechanical Properties of a High-Purity $Y_2O_3-Al_2O_3$ -Containing Silicon Nitride Ceramic: Role of Oxygen", *Journal of the American Ceramic Society*, vol. 88 (7), July 2005, pp. 1900-1908.
499. J. J. Kruzic, R. M. Cannon, and R. O. Ritchie, "Effects of Moisture on Grain-Boundary Strength, Fracture and Fatigue Properties of Polycrystalline Alumina", *Journal of the American Ceramic Society*, vol. 88 (8), Aug. 2005, pp. 2236-2245.

500. R. O. Ritchie, R. K. Nalla, J. J. Kruzic, and J. H. Kinney, "Time vs. Cycle Dependence of *Ex Vivo* Fatigue in Human Cortical Bone", *Proceedings of the 11th International Conference on Fracture*, A. Carpinteri, Y.-W. Mai, and R. O. Ritchie, eds., Turin, Italy, 2005.
501. J. J. Kruzic, R. M. Cannon, and R. O. Ritchie, "Fatigue of Bridging Ceramics: Understanding Crack Size Effects", *Proceedings of the 11th International Conference on Fracture*, A. Carpinteri, Y.-W. Mai, and R. O. Ritchie, eds., Turin, Italy, 2005.
502. A. Ziegler, J. C. Idrobo, M. K. Cinibulk, C. Kisielowski, N. D. Browning, and R. O. Ritchie, "High-Resolution Interface Atomic Structure Analysis in Silicon Nitride Ceramics", in *Electron Microscopy of Molecular and Atom-Scale Mechanical Behavior, Chemistry, and Structure*, MRS Symposium Proceedings, D. Martin, D. A. Muller, E. A. Stach, and P. Midgley, eds., vol. 839, Materials Research Society, Warrendale, PA, 2005, pp. 23-38.
503. A. Ziegler, J. M. McNaney, M. J. Hoffmann, and R. O. Ritchie, "On the Effect of Local Grain-Boundary Chemistry on the Macroscopic Mechanical Properties of a High Purity Y_2O_3 - Al_2O_3 -Containing Silicon Nitride Ceramic", in *Electron Microscopy of Molecular and Atom-Scale Mechanical Behavior, Chemistry, and Structure*, MRS Symposium Proceedings, D. Martin, D. A. Muller, E. A. Stach, and P. Midgley, eds., vol. 839, Materials Research Society, Warrendale, PA, 2005, pp. 79.84.
504. J. J. Kruzic, J. H. Schneibel, and R. O. Ritchie, "Role of Microstructure in Promoting Fracture and Fatigue Resistance in Mo-Si-B Alloys", in *Integrative and Interdisciplinary Aspects of Intermetallics*, MRS Symposium Proceedings, M. J. Mills, H. Inui, C.-L. Fu, and H. Clemens, eds., vol. 842, Materials Research Society, Warrendale, PA, 2005, pp. 303-308.
505. R. K. Nalla, J. J. Kruzic, J. H. Kinney, M. Balooch, J. W. Ager III, M. C. Martin, A. P. Tomsia, and R. O. Ritchie, "Effects of Aging on the Toughness of Human Cortical Bone: A Study from Nano to Macro Size-Scales", in *Mechanical Properties of Bio-Inspired and Biological Materials*, MRS Symposium Proceedings, C. Viney, K. Katti, F.-J. Ulm, and, C. Hellmich, eds., vol. 844, Materials Research Society, Warrendale, PA, 2005, Y8.10.
506. R. K. Nalla, J. H. Kinney, J. A. Pople, T. M. Breunig, A. P. Tomsia, and R. O. Ritchie, "Effect of Age-Induced Transparency on the Mechanical Properties of Human Dentin", in *Structure and Mechanical Behavior of Biological Materials*, MRS Symposium Proceedings, P. Fratzl, W. J. Landis, R. Wang, and F. H. Silver, eds., vol. 874, Materials Research Society, Warrendale, PA, 2005, p. L.1.1.
507. N. D. Browning, R. Erni, S. Lopatin, A. Ziegler, J. C. Idrobo, C. F. Kisielowski, M. K. Cinibulk, and R. O. Ritchie, "Scanning Transmission Electron Microscopy in the FEI Monochromated Tecnai F20 UT", *FEI Applied Solutions*, vol. 1, 2005, pp. 16-27.
508. A. Ziegler, J. C. Idrobo, M. K. Cinibulk, C. Kisielowski, N. D. Browning, and R. O. Ritchie, "Interface Structure and Atomic Bonding Characteristics in Silicon Nitride Ceramics", *Ceramic Transactions*, AM05 066.R1, 2005.
509. N. D. Browning, R. P. Erni, J. C. Idrobo, A. Ziegler, C. F. Kisielowski, and R. O. Ritchie, "High Spatial and Energy Resolution EELS using a Monochromated STEM", *Microscopy and Microanalysis*, vol. 11 (S02), 2005, pp. 1434.
510. J. J. Kruzic, J. H. Schneibel, and R. O. Ritchie, "Ambient- to Elevated-Temperature Fracture and Fatigue Properties of Mo-Si-B Alloys: Role of Microstructure", *Metallurgical and Materials Transactions A*, vol. 36A, Sept. 2005, pp. 2393-2402.
511. B. C. Regan, S. Aloni, K. Jensen, R. O. Ritchie, and A. Zettl, "Nanocrystal-Powered Nanomotor", *Nano Letters*, vol. 5 (9), Sept. 14, 2005, pp. 1730-1733.
512. A. E. Porter, R. K. Nalla, A. Minor, J. R. Jinschek, C. F. Kisielowski, V. Radmilovic, J. H. Kinney, A. P. Tomsia, and R. O. Ritchie, "A Transmission Electron Microscopy Study of Mineralization in Age-Induced Transparent Dentin", *Biomaterials*, vol. 26 (36), Dec. 2005, pp. 7525-7686.

513. R. O. Ritchie, "Whither Nano and Bio?", *Materials Today*, vol. 8 (12), Dec. 2005, p. 72.
514. R. K. Nalla, A. E. Porter, C. Dariao, A. M. Minor, V. Radmilovic, E. A. Stach, A. P. Tomsia, and R. O. Ritchie, "Ultrastructural Examination of Dentin using Focused Ion-Beam Cross-Sectioning and Transmission Electron Microscopy", *Micron*, vol. 36 (7-8), Oct.-Dec., 2005, pp. 672-680.
515. Y. Gao, M. Kumar, R. K. Nalla, and R. O. Ritchie, "High-Cycle Fatigue of a Nickel-Base Superalloy ME3 at Ambient and Elevated Temperatures: Role of Grain-Boundary Engineering", *Metallurgical and Materials Transactions A*, vol. 36A (12), Dec. 2005, pp. 3325-3333.
516. J. C. Idrobo, H. Iddir, S. Ögüt, A. Ziegler, N. D. Browning, and R. O. Ritchie, "Ab Initio Structural Energetics of β -Si₃N₄ Surfaces", *Physical Review B*, vol. 72 (24), Dec. 2005, pp. 241301-4 (R).
517. G. Balooch, M. Balooch, R. K. Nalla, S. Schilling, E. Filvaroff, G. W. Marshall, S. J. Marshall, R. O. Ritchie, R. Derynck, and T. Alliston, "TGF- β Regulates the Mechanical Properties and Composition of Bone Matrix", *Proceedings of the National Academy of Sciences (PNAS)*, vol. 102 (52), Dec. 27, 2005, pp. 18813-18818.
518. U. Noster, I. Altenberger, R. O. Ritchie and B. Scholtes, "Isothermal Fatigue Behavior and Residual Stress States of Mechanically Surface Treated Ti-6Al-4V: Laser Shock Peening vs. Deep Rolling", in *Shot Peening*, L. Wagner, ed., Wiley-VCH, Weinheim, Germany, 2006, pp. 447-453.
519. I. Altenberger, U. Noster, B. Scholtes and R. O. Ritchie, "High Temperature Fatigue of Mechanically Surface Treated Materials", in *Shot Peening*, L. Wagner, ed., Wiley-VCH, Weinheim, Germany, 2006, pp. 483-489.
520. A. Ziegler, J. C. Idrobo, M. K. Cinibulk, C. Kisielowski, N. D. Browning, and R. O. Ritchie, "Atomic-Resolution Observation of Semi-Crystalline Intergranular Thin Films in Silicon Nitride", *Applied Physics Letters*, vol. 88 (4), Jan. 23, 2006, p. 141919.
521. M. H. Mankani, S. A. Kuznetsov, B. Shannon, R. K. Nalla, R. O. Ritchie, Y. Qin, P. G. Robey, "Canine Cranial Reconstruction Using Autologous Bone Marrow Stromal Cells", *American Journal of Pathology*, vol. 168 (2), Feb. 2006, pp. 542-550.
522. S. W. Robertson, X.-Y. Gong, and R. O. Ritchie, "Effect of Product Form and Heat Treatment on the Crystallographic Texture of Austenitic Nitinol", *Journal of Materials Science*, vol. 41 (3), Feb. 2006, pp. 621-630.
523. R. V. Marrey, R. Burgermeister, R. B. Grishaber, and R. O. Ritchie, "Fatigue and Life Prediction for Cobalt-Chromium Stents: A Fracture Mechanics Analysis", *Biomaterials*, vol. 27 (9), March 2006, pp. 1988-2000.
524. Q. D. Yang, B. N. Cox, R. K. Nalla, and R. O. Ritchie, "Fracture Length Scales in Human Cortical Bone: The Necessity of Nonlinear Fracture Models", *Biomaterials*, vol. 27 (9), March 2006, pp. 2095-2113.
525. J. J. Kruzic, J. A. Scott, R. K. Nalla, and R. O. Ritchie, "Propagation of Surface Fatigue Cracks in Human Cortical Bone", *Journal of Biomechanics*, vol. 39 (5), 2006, pp. 968-972.
526. V. Schroeder and R. O. Ritchie, "Stress-Corrosion Fatigue-Crack Growth in a Zr-Based Bulk Amorphous Metal", *Acta Materialia*, vol. 54 (7), April 2006, pp. 1785-1794.
527. Q. D. Yang, B. N. Cox, R. K. Nalla, and R. O. Ritchie, "Re-Evaluating the Toughness of Human Cortical Bone", *Bone*, vol. 38 (6), June 2006, pp. 878-887.
528. C. W. Dwyer, A. Ziegler, N. Shibata, G. B. Winkelmann, R. L. Satet, M. J. Hoffmann, M. K. Cinibulk, P. F. Becher, G. S. Painter, N. D. Browning, D. J. H. Cockayne, R. O. Ritchie, and S. J. Pennycook, "Interfacial Structure in Silicon Nitride Sintered with Lanthanide Oxide", *Journal of Materials Science*, vol. 41 (14), July 2006, pp. 4405-4412.
529. J. W. Ager III, G. Balooch and R. O. Ritchie, "Fracture, Aging and Disease in Bone", *Journal of Materials Research*, vol. 21 (8), Aug. 2006, pp. 1878-1892.

530. R. K. Nalla, J. J. Kruzic, J. H. Kinney, M. Balooch, J. W. Ager III, and R. O. Ritchie, "Role of Microstructure in the Aging-Related Deterioration of the Toughness of Human Cortical Bone", *Materials Science and Engineering C*, vol. 26 (8), Sept. 2006, pp. 1251-1260.
531. J. Russias, E. Saiz, R. K. Nalla, K. Gryn, R. O. Ritchie, and A. P. Tomsia, "Fabrication and Mechanical Properties of PLA/HA Composites: A Study of *In Vitro* Degradation", *Materials Science and Engineering C*, vol. 26 (8), Sept. 2006, pp. 1289-1295.
532. R. O. Ritchie, J. H. Kinney, J. J. Kruzic, and R. K. Nalla, "Cortical Bone Fracture", in *Wiley Encyclopedia of Biomedical Engineering*, Metin Akay, ed., Hoboken: Wiley, 2006; doi.org/10.1002/9780471740360.ebs0505.
533. S. W. Robertson, V. Imbeni, H.-R. Wenk, and R. O. Ritchie, "Crystallographic Texture in Austenitic Nitinol", in *SMST-2004, Proceedings of the International Conference on Shape Memory and Superelastic Technologies*, Baden-Baden, Germany, M. Mertmann, ed., ASM Intl., Materials Park, OH, 2006, pp. 37-43.
534. S. W. Robertson, J. Stankiewicz, X. Y. Gong, and R. O. Ritchie, "Cyclic Fatigue of Nitinol", in *SMST-2004, Proceedings of the International Conference on Shape Memory and Superelastic Technologies*, Baden-Baden, Germany, M. Mertmann, ed., ASM Intl., Materials Park, OH, 2006, pp. 79-88.
535. R. K. Nalla, J. H. Kinney, A. P. Tomsia, and R. O. Ritchie, "Role of Alcohol on the Fracture Resistance of Teeth", *Journal of Dental Research*, vol. 85 (11), Nov. 2006, pp. 1022-1026.
536. R. O. Ritchie, R. K. Nalla, J. J. Kruzic, J. W. Ager III, G. Balooch, and J. H. Kinney, "Fracture and Ageing in Bone: Toughness and Structural Characterization", *Strain*, vol. 42 (4), Nov. 2006, pp. 225-232.
537. J. J. Kruzic and R. O. Ritchie, "Kitagawa-Takahashi Diagrams Define the Limiting Conditions for Cyclic Fatigue Failure in Human Dentin", *Journal of Biomedical Materials Research A*, vol. 79A (3), Dec. 2006, pp. 747-751.
538. J. J. Kruzic, R. M. Cannon, and R. O. Ritchie, "Fatigue Threshold R-Curves for Reliability Predictions in Bridging Materials", in *Fatigue 2006, Proceedings of the 9th International Fatigue Congress*, W. L. Johnson, ed., 2006.
539. J. W. Ager III, R. K. Nalla, G. Balooch, G. Kim, M. Pugach, S. Habelitz, G. W. Marshall, J. H. Kinney, and R. O. Ritchie, "On the Increasing Fragility of Human Teeth with Age: A Deep-UV Resonance Raman Study", *Journal of Bone and Mineral Research*, vol. 21 (12), Dec. 2006, pp. 1879-1887.
540. R. O. Ritchie and R. K. Nalla, "Fracture, Aging and Disease in Bone and Teeth", in "Fracture of Nano and Engineering Materials and Structures", *Proceedings of the 16th European Conference on Fracture (ECF-16)*, E. E. Gdoutos, ed., Springer, Dordrecht, The Netherlands, 2006, pp. 23-24.
541. D. H. Alsem, R. Timmerman, E. A. Stach, C. L. Muhlstein, M. T. Dugger, and R. O. Ritchie, "Wear and Fatigue in Silicon Structural Films for MEMS Applications", in "Fracture of Nano and Engineering Materials and Structures", *Proceedings of the 16th European Conference on Fracture (ECF-16)*, E. E. Gdoutos, ed., Springer, Dordrecht, The Netherlands, 2006, pp. 671-672.
542. R. V. Marrey, R. Burgermeister, R. B. Grishaber, and R. O. Ritchie, "Implant Device Design Based on Survival: A Damage Tolerant Analysis of a Cardiovascular Stent", in *Medical Device Materials*, Proceedings of the Third ASM Materials and Processes for Medical Devices Conference, ASM Int., Materials Park, OH, 2006, pp. 117-122.
543. D. H. Alsem, R. Timmerman, B. L. Boyce, E. A. Stach, J. Th. M. De Hosson, and R. O. Ritchie, "Very High-Cycle Fatigue Failure in Micron-Scale Polycrystalline Silicon Films: Effects of Environment and Surface Oxide Thickness", *Journal of Applied Physics*, vol. 101 (1), 2007, pp. 013515; doi.org/10.1063/1.2403841.

544. D. H. Alsem, O. N. Pierron, E. A. Stach, C. L. Muhlstein, and R. O. Ritchie, "Mechanisms for Fatigue of Micron-Scale Silicon Structural Films", *Advanced Engineering Materials*, vol. 9 (1-2), Feb. 2007, pp. 15-30.
545. D. H. Alsem, E. A. Stach, M. T. Dugger, M. Enachescu, and R. O. Ritchie, "An Electron Microscopy Study of Wear in Polysilicon Microelectromechanical Systems", *Thin Solid Films*, vol. 515 (6), Feb. 2007, pp. 3259-3266.
546. S. W. Robertson and R. O. Ritchie, "In Vitro Fatigue-Crack Growth and Fracture Toughness Behavior of Thin-Walled Superelastic Nitinol Tube for Endovascular Stents: A Basis for Defining the Effects of Crack-Like Defects", *Biomaterials*, vol. 28 (4), Feb. 2007, pp. 700-709.
547. R. Yu, X. F. Zhang, L. C. De Jonghe, and R. O. Ritchie, "Elastic Constants and Tensile Properties of Al₂O₃ by Density Functional Calculations", *Physical Review B*, vol. 75, 2007, pp. 104114.
548. J. C. Card, R. M. Cannon, E. Saiz, A. P. Tomsia, and R. O. Ritchie, "Of the Physics of Moisture-Induced Cracking in Metal-Glass (Copper/Silica) Interfaces", *Journal of Applied Physics*, vol. 102, 2007, pp. 053516-12.
549. J. W. Foulk III, R. M. Cannon, G. C. Johnson, P. A. Klein, and R. O. Ritchie, "A Micromechanical Basis for Partitioning the Evolution of Grain Bridging in Brittle Materials", *Journal of the Mechanics and Physics of Solids*, vol. 55 (4) April 2007, pp. 719-743.
550. Y. Gao, J. S. Stölken, M. Kumar, and R. O. Ritchie, "High-Cycle Fatigue of Nickel-Base Superalloy René 104 (ME3): Interaction of Microstructurally-Small Cracks with Grain Boundaries of Known Character", *Acta Materialia*, vol. 55 (9), May 2007, pp. 3155-3167.
551. A. Metha, X.-Y. Gong, V. Imbeni, A. R. Pelton, and R. O. Ritchie, "Understanding the Deformation and Fracture of Nitinol using In Situ Synchrotron X-Ray Micro-Diffraction", *Advanced Materials*, vol. 19 (9), May 2007, pp. 1183-1186.
552. J. M. Stankiewicz, S. W. Robertson, and R. O. Ritchie, "On the Fatigue-Crack Growth Properties of Thin-Walled Superelastic Austenitic Nitinol Tube for Endovascular Stents", *Journal of Biomedical Materials Research A*, vol. 81A (3), June 2007, pp. 685-691.
553. Y. Xu, G. Balooch, M. Chiou, E. Bakerman, R. O. Ritchie, and M. T. Longaker, "Analysis of the Material Properties of Chondrogenic Differentiated Adipose-Derived Adult Stromal Cells (ASC) Using an In Vitro Three-dimensional Micromass Culture System", *Biochemical and Biophysical Research Communications*, vol. 359 (2), July 2007, pp. 311-316.
554. A. Ziegler, M. K. Cinibulk, C. Kisielowski, and R. O. Ritchie, "Atomic-Scale Observation of the Grain-Boundary Structure of Yb-Doped and Heat-Treated Silicon Nitride Ceramics", *Applied Physics Letters*, vol. 91 (1), Oct. 2007, pp. 141906.
555. S. W. Robertson, A. Mehta, A. R. Pelton, and R. O. Ritchie, "Evolution of Crack-Tip Transformation Zones in Superelastic Nitinol Subjected to In Situ Fatigue: A Fracture Mechanics and Synchrotron X-Ray Micro-Diffraction Analysis", *Acta Materialia*, vol. 55 (18) Oct. 2007, pp. 6198-6207.
556. D. R. Bloyer, J. M. McNaney, R. M. Cannon, E. Saiz, A. P. Tomsia, and R. O. Ritchie, "Stress-Corrosion Crack Growth of Si-Na-K-Mg-Ca-P-O Bioactive Glasses in Simulated Human Physiological Environment", *Biomaterials*, vol. 28 (33), Nov. 2007, pp. 4901-4911.
557. W. Yao, Z. Cheng, K. J. Koester, J. W. Ager III, M. Balooch, A. Pham, S. Chefo, C. Busse, R. O. Ritchie, and N. E. Lane, "The Degree of Bone Mineralization is Maintained with Single Intravenous Bisphosphonates in Aged Estrogen Deficient Rats and is a Strong Predictor of Bone Strength", *Bone*, vol. 41 (5), Nov. 2007, pp. 804-812.
558. K. E. Thomson, D. Jiang, R. O. Ritchie, and A. K. Mukherjee, "A Preservation Study of Carbon Nanotubes in Alumina-Based Nanocomposites via Raman Spectroscopy and Nuclear Magnetic Resonance", *Applied Physics A*, vol. 89 (3), Nov. 2007, pp. 651-654.

559. S. W. Robertson, R. O. Ritchie, A. Mehta, X.-Y. Gong, and A. R. Pelton, "Ultrahigh Resolution *In Situ* Diffraction Characterization of the Local Mechanics at a Growing Crack Tip in Nitinol", in *SMST-2006, Proceedings of the 2006 International Conference on Shape Memory and Superelastic Technologies*, Asilomar, CA, May 2006, B. Berg, M. R. Mitchell and J. Proft, eds., ASM Intl., Materials Park, OH, 2008, pp. 35-42.
560. G. Balooch, W. Yao, J. W. Ager III, M. Balooch, R. K. Nalla, A. E. Porter, A. Mastroianni, R. O. Ritchie, and N. E. Lane, "The Aminobisphosphonate, Risedronate, Preserves Localized Mineral and Material Properties of Bone in the Presence of Glucocorticoids", *Arthritis and Rheumatism*, vol. 56 (11), Nov. 2007, pp. 3726-3737.
561. S. W. Robertson, J. M. Stankiewicz, and R. O. Ritchie, "A Fracture-Mechanics Approach to Fatigue of Nitinol Tube", in *SMST-2006, Proceedings of the 2006 International Conference on Shape Memory and Superelastic Technologies*, Asilomar, CA, May 2006, B. Berg, M. R. Mitchell and J. Proft, eds., ASM Intl., Materials Park, OH, 2008, pp. 53-60.
562. D. H. Alsem, R. van der Hulst, E. A. Stach, M. T. Dugger, J. Th. M. deHosson, and R. O. Ritchie, "Nano-Scale Tribological Behavior of Polycrystalline Silicon Structural Films in Ambient Air", in *Nanoscale Tribology, MRS Symposium Proceedings*, Y. Ando, R. W. Carpick, R. Bennewitz and W. G. Sawyer, eds., vol. 1085E, Materials Research Society, Warrendale, PA, 2008, p. T1.4.
563. S. W. Robertson and R. O. Ritchie, "A Fracture-Mechanics Based Approach to Fracture Control in Biomedical Devices Manufactured from Superelastic Nitinol Tube", *Journal of Biomedical Materials Research B: Applied Biomaterials*, vol. 84B (1), Jan. 2008, pp. 26-33.
564. J. J. Kruzic and R. O. Ritchie, "Fatigue of Mineralized Tissues: Bone and Dentin", *Journal of the Mechanical Behavior of Biomedical Materials*, vol. 1 (1), Jan. 2008, pp. 3-17.
565. M. Staninec, H. Nguyen, P. Kim, G. W. Marshall, R. O. Ritchie, and S. J. Marshall, "Four-Point Bending Evaluation of Dentin-Composite Interfaces", *Medicina Oral, Patología Oral Y Cirugía Bucal*, vol. 13 (1), Jan. 2008, pp. E81-84.
566. K. J. Koester, J. W. Ager III, and R. O. Ritchie, "The Effect of Aging on Crack-Growth Resistance and Toughening Mechanisms in Human Dentin", *Biomaterials*, vol. 29, 2008, pp. 1318-1328.
567. R. O. Ritchie, "The Quest for Stronger Tougher Materials" (letter), *Science*, vol. 320 (5875), 25 April 2008, p. 448.
568. J. J. Kruzic and R. O. Ritchie, "Comments on 'Measurement of the Microstructural Fracture Toughness of Cortical Bone using Indentation Fracture'", *Journal of Biomechanics*, vol. 41 (6), 2008, pp. 1379-1380.
569. K. J. Koester, J. W. Ager III, and R. O. Ritchie, "Aging and Fracture of Human Cortical Bone and Tooth Dentin", *Journal of Materials*, vol. 80 (6), June 2008, pp. 33-38.
570. J. W. Foulk III, G. C. Johnson, P. A. Klein, and R. O. Ritchie, "On the Toughening of Brittle Materials by Grain Bridging: Promoting Intergranular Fracture Through Grain Angle, Strength and Toughness," *Journal of the Mechanics and Physics of Solids*, vol. 56 (6), June 2008, pp. 2381-2400.
571. M. Staninec, P. Kim, G. W. Marshall, R. O. Ritchie, and S. J. Marshall, "Fatigue of Dentin-Composite Interfaces with Four-Point Bend", *Dental Materials*, vol. 24 (6), June 2008, pp. 799-803.
572. J. J. Kruzic, R. L. Sadat, M. J. Hoffmann, R. M. Cannon, and R. O. Ritchie, "The Utility of R-Curves for Understanding Fracture Toughness-Strength Relations in Bridging Ceramics", *Journal of the American Ceramic Society*, vol. 91 (6), June 2008, pp. 1986-1994.
573. K. Gall, J. Tyber, G. Wilkesanders, S. W. Robertson, R. O. Ritchie, and H. J. Maier, "Effect of Microstructure on the Fatigue of Hot Rolled and Cold Drawn NiTi Shape Memory Alloys", *Materials Science and Engineering A*, vol. 486 (1-2), July 2008, pp.389-403.

574. K. J. Koester, J. W. Ager III, and R. O. Ritchie, "How Tough is Human Bone? In Situ Measurements on Realistically Short Cracks", *Nature Materials*, vol. 7 (8), Aug. 2008, pp. 672-677.
575. R. Neuendorf, E. Saiz, A. P. Tomsia, and R. O. Ritchie, "Adhesion between Biodegradable Polymers and Hydroxyapatite: Relevance to Synthetic Bone-Like Materials and Tissue Engineering Scaffolds", *Acta Biomaterialia*, vol. 4 (5), Sept. 2008, pp. 1288-1296.
576. A. M. Kueck, D. K. Kim, Q. Ramasse, L. C. De Jonghe, and R. O. Ritchie, "Atomic-Resolution Imaging of the Nanoscale Origin of Toughness in Rare-Earth Doped SiC Ceramics", *Nano Letters*, vol. 8 (9), Sept. 2008, pp. 2935-2939.
577. D. A. Alsem, B. L. Boyce, E. A. Stach, and R. O. Ritchie, "Effect of the Post-Release Sidewall Morphology on the Fracture and Fatigue Properties of Polycrystalline Silicon Structural Films", *Sensors and Actuators A*, vol. 147 (2), Oct. 2008, pp. 553-560.
578. K. E. Thomson, D. Jiang, J. A. Lemberg, K. J. Koester, R. O. Ritchie, and A. K. Mukherjee, "In-Situ Bend Testing of Niobium-Reinforced Alumina Nanocomposites with and without Single-Walled Nanotubes", *Materials Science and Engineering A*, vol. 493 (1-2), Oct. 2008, pp. 256-260.
579. D. H. Alsem, M. T. Dugger, E. A. Stach, and R. O. Ritchie, "Micron-Scale Friction and Sliding Wear of Polysilicon Silicon Thin Structural Films in Ambient Air", *Journal of Microelectromechanical Systems*, vol. 17 (5), Oct. 2008, pp. 1144-1154.
580. R. O. Ritchie, K. J. Koester, S. Ionova, W. Yao, N. E. Lane, and J. W. Ager III, "Measurement of the Toughness of Bone: A Tutorial with Special Reference to Small Animal Studies", *Bone*, vol. 43 (5), Nov. 2008, pp. 798-812.
581. D. H. Alsem, C. L. Muhlstein, E. A. Stach, and R. O. Ritchie, "Further Considerations on the High-Cycle Fatigue of Micron-Scale Polycrystalline Silicon", *Scripta Materialia*, vol. 59 (9), Nov. 2008, pp. 931-935.
582. W. Yao, Z. Cheng, A. Pham, C. Busse, E. Zimmerman, R. O. Ritchie, and N. E. Lane, "Glucocorticoid-Induced Bone Loss in Mice Can Be Reversed by the Actions of Parathyroid Hormone and Risedronate on Different Pathways for Bone Formation and Mineralization", *Arthritis and Rheumatism*, vol. 58 (11), Nov. 2008, pp. 3485-3497.
583. ^{ix}E. Munch, M. E. Launey, D. H. Alsem, E. Saiz, A. P. Tomsia, and R. O. Ritchie, "Tough Bio-Inspired Hybrid Materials", *Science*, vol. 322 (5907), Dec 5, 2008, pp. 1516-1520.
584. D. H. Alsem, B. L. Boyce, E. A. Stach, and R. O. Ritchie, "Effect of Sidewall Morphology on the Fracture and Fatigue Properties of Polysilicon Structural Films", in *Proceedings of the 12th International Conference on Fracture (ICF-12)*, Ottawa, Canada, July 2009.
585. P. Sofronis, M. Dadfarnia, P. Novak, R. Yuan, B. Somerday, I. M. Robertson, R. O. Ritchie, T. Kanazaki, and Y. Murakami "A Combined Applied Mechanics/Materials Science Approach Toward Quantifying the Role of Hydrogen on Material Degradation", in *Proceedings of the 12th International Conference on Fracture (ICF-12)*, Ottawa, Canada, July 2009.
586. Z. Cheng, W. Yao, E. Zimmerman, C. Busse, R. O. Ritchie, and N. E. Lane, "Prolonged Treatments with Anti-Resorptive Agents and PTH have Different Effects on Bone Strength and the Degree of Mineralization in Estrogen Deficient Osteoporosis in Aged Female Rats", *Journal of Bone and Mineral Research*, vol. 24 (2), Feb. 2009, pp. 209-220.
587. M. E. Launey, D. C. Hofmann, W. L. Johnson, and R. O. Ritchie, "Solution to the Problem of the Poor Cyclic Fatigue Resistance of Bulk Metallic Glasses", *Proceedings of the National Academy of Sciences (PNAS)*, vol. 106 (13), March 31, 2009, pp. 4986-4991.
588. M. Staninec, N. Meshkin, S. K. Manesh, R. O. Ritchie, and D. Fried, "Weakening of Dentin from Cracks Resulting from Laser Irradiation", *Dental Materials*, vol. 25 (4), April 2009, pp. 520-525.

^{ix} Honorable Mention: 2009 American Association for the Advancement of Science *Newcombe Cleveland Prize* for the best paper in *Science*.

589. K. S. Mohammad, C. Chen, G. Balooch, E. Stebbins, E. Stebbins, C. R. McKenna, H. Davis, M. Niewolna, X. H. Peng, D. H. N. Nguyen, S. S. Ionova-Martin, J. W. Bracey, W. R. Hogue, D. H. Wong, R. O. Ritchie, L. J. Suva, R. Derynck, T. A. Guise, and T. Alliston, "Pharmacologic Inhibition of the TGF- β Type I Receptor has Anabolic and Anti-Catabolic Effects on Bone", *The Public Library of Science - One (PLoS ONE)*, vol. 4 (4), April 2009, art. e5275; doi.org/10.1371/journal.pone.0005275.
590. M. E. Launey and R. O. Ritchie, "On the Fracture Toughness of Advanced Materials", *Advanced Materials*, vol. 21 (20), May 25, 2009, pp. 2103-2110.
591. M. E. Launey, E. Munch, D. H. Alsem, H. B. Barth, E. Saiz, A. P. Tomsia, and R. O. Ritchie, "Designing Highly Toughened Hybrid Composites Through Nature-Inspired Hierarchical Complexity", *Acta Materialia*, vol. 57 (10), June 2009, pp. 2919-2932.
592. R. O. Ritchie, M. J. Buehler, and P. Hansma, "Plasticity and Toughness in Bone", *Physics Today*, vol. 62 (6), June 2009, pp. 41-47.
593. M. E. Launey, D. C. Hofmann, J.-Y. Suh, H. Kzachkov, W. L. Johnson, and R. O. Ritchie, "Fracture Toughness and Crack-Resistance Curve Behavior in Metallic Glass-Matrix Composites", *Applied Physics Letters*, vol. 94 (1), June 2009, p. 241910.
594. S. Bechtle, M. Kumar, B. P. Somerday, M. E. Launey, and R. O. Ritchie, "Grain-Boundary Engineering Markedly Reduces Susceptibility to Intergranular Hydrogen Embrittlement in Metallic Materials", *Acta Materialia*, vol. 57 (14), July 2009, pp. 4148-4157.
595. J. J. Kruzic, D. K. Kim, K. J. Koester, and R. O. Ritchie, "Indentation Techniques for Evaluating the Fracture Toughness of Biomaterials and Hard Tissues", *Journal of the Mechanical Behavior of Biomedical Materials*, vol. 2 (4), Aug. 2009, pp. 384-395.
596. E. A. Zimmermann, M. E. Launey, H. D. Barth, and R. O. Ritchie, "Mixed-Mode Fracture of Human Cortical Bone", *Biomaterials*, vol. 30 (29), Oct. 2009, pp. 5877-5884.
597. S. S. Ionova-Martin, S. H. Do, H. D. Barth, M. Szadkowska, A. E. Porter, J. W. Ager III, J. W. Ager, T. Alliston, C. Vaisse, and R. O. Ritchie, "Reduced Size-Independent Mechanical Properties of Cortical Bone in High-Fat Diet Obesity", *Bone*, vol. 46 (1), Jan. 2010, pp. 217-225.
598. P. Novak, R. Yuan, B. P. Somerday, P. Sofronis, and R. O. Ritchie, "A Statistical, Physical-Based, Micro-Mechanical Model of Hydrogen-Induced Intergranular Fracture in Steel", *Journal of the Mechanics and Physics of Solids*, vol. 58 (2), Feb. 2010, pp. 206-226.
599. M. Budnitzki, M. C. Scates, R. O. Ritchie, E. A. Stach, C. L. Muhlstein, and O. N. Pierron, "The Effects of Cubic Stiffness on Fatigue Characterization Resonator Performance", *Sensors and Actuators A*, vol. 157 (2), Feb. 2010, pp. 228-234.
600. M. E. Launey, P.-Y. Chen, J. McKittrick, and R. O. Ritchie, "Mechanistic Aspects of the Fracture Toughness of Elk Antler Bone", *Acta Biomaterialia*, vol. 6 (4), April 2010, pp. 1505-1514.
601. R. O. Ritchie, "How Does Human Bone Resist Fracture?", in *Skeletal Biology and Medicine*, *Annals of the New York Academy of Sciences*, vol. 1192, April 2010, pp. 72-80.
602. A. M. Kueck, Q. M. Ramasse, L. C. De Jonghe, and R. O. Ritchie, "Atomic-Scale Imaging and the Effect of Yttrium on the Fracture Toughness of Silicon Carbide Ceramics", *Acta Materialia*, vol. 58 (8), May 2010, pp. 2999-3005.
603. C. S. Lee, J. A. Lemberg, D. G. Cho, J. Y. Roh, and R. O. Ritchie, "Mechanical Properties of Si₃N₄-Al₂O₃ FGM Joints with 15 Layers for High-Temperature Applications", *Journal of the European Ceramic Society*, vol. 30 (7), May 2010, pp. 1743-1749.
604. M. E. Launey, E. Munch, D. H. Alsem, E. Saiz, A. P. Tomsia, and R. O. Ritchie, "A Novel Biomimetic Approach to the Design of High-Performance Ceramic/Metal Composites", *Journal of the Royal Society Interface*, vol. 7 (46), May 2010, pp. 741-753.

605. M. Shahnazari, W. Yao, W-W. Dai, B. Wang, A. J. Burghardt, S. S. Ionova-Martin, R. O. Ritchie, D. Heeren, A. J. Burghardt, D. P. Nicoletta, M. G. Kimiecik, and N. E. Lane, "Higher Doses of Bisphosphonates Further Improve Bone Mass, Architecture and Strength but not the Tissue Materials Properties in Aged Rats", *Bone*, vol. 46 (5), May 2010, pp. 1267-1274.
606. H. D. Barth, M. E. Launey, A. A. MacDowell, and R. O. Ritchie, "On the Effect of X-ray Irradiation on the Deformation and Fracture Behavior of Human Cortical Bone", *Bone*, vol. 46 (6), June 2010, pp. 1475-1485.
607. P. J. Thurner, C. G. Chen, S. Ionova-Martin, L. Sun, A. Harman, A. Porter, J. W. Ager III, R. O. Ritchie, and T. Alliston, "Osteopontin Deficiency Increases Bone Fragility but Preserves Bone Mass", *Bone*, vol. 46 (6), June 2010, pp. 1564-1573.
608. E. A. Zimmermann, M. E. Launey, and R. O. Ritchie, "The Significance of Crack-Resistance Curves to the Mixed-Mode Fracture Toughness of Human Cortical Bone", *Biomaterials*, vol. 31 (20), July 2010, pp. 5297-5308.
609. A. Diez-Perez, R. Güerri, X. Nogues, E. Cáceres, M. J. Peña, L. Mellibovsky, C. Randall, D. Bridges, J. Weaver, A. Proctor, D. Brimer, K. J. Koester, R. O. Ritchie, and P. K. Hansma, "Microindentation for *In Vivo* Measurement of Bone Tissue Mechanical Properties in Humans", *Journal of Bone and Mineral Research*, vol. 25 (8), Aug. 2010, pp. 1877-1885.
610. M. E. Launey, M. J. Buehler, and R. O. Ritchie, "On the Mechanistic Origins of Toughness in Bone", *Annual Review of Materials Research*, vol. 40, 2010, pp. 25-53.
611. J. L. Chang, D. S. Brauer, J. Johnson, C. Chen, O. Akil, G. Balooch, M. B. Humphrey, E. N. Chin, A. E. Porter, K. Butcher, R. O. Ritchie, R. A. Schneider, A. Lalwani, R. Derynck, G. W. Marshall, S. J. Marshall, L. Lustig, and T. Alliston, "Tissue-Specific Calibration of Extracellular Matrix Material Properties by TGF- β and Runx2 is Required for Hearing", *EMBO Reports (European Molecular Biology Organization)*, vol. 11 (10), Sept. 2010, pp. 765-771.
612. D. H. Alsem, R. van der Hulst, E. A. Stach, M. T. Dugger, J. Th. M. de Hosson, and R. O. Ritchie, "Wear Mechanisms and Friction Parameters for Sliding Wear of Micron-Scale Polysilicon Sidewalls", *Sensors and Actuators A*, vol. 163 (1), Sept. 2010, pp. 373-382.
613. D. V. Wilbrink, M. Utz, R. O. Ritchie, and M. R. Begley, "Scaling of Strength and Ductility in Bioinspired Brick and Mortar Composites", *Applied Physics Letters*, vol. 97 (19), Nov. 2010, pp. 193701.
614. B. Busse, D. Djonic, P. Milovanovic, M. Hahn, K. Püschel, R. O. Ritchie, M. Djuric, and M. Amling, "Decrease in the Osteocyte Lacunae Density Accompanied by Hypermineralized Lacunar Occlusion Reveal Failure and Delay of Remodeling in Aged Human Bone", *Aging Cell*, vol. 9 (6), Dec. 2010, pp. 1065-1075.
615. B. N. Cox, M. R. Begley, P. Kroll, D. B. Marshall, R. O. Ritchie, and Q. D. Yang, "Multi-Scale Approaches to Fracture and Fatigue of Fiber Composites – Where are the Experimental and Computational Limits and Challenges?", in *Composite Materials for Structural Performance: Towards Higher Limits, Proceedings of the 32nd Risø International Symposium on Materials Science*, 2011.
616. R. A. Meiom, D. H. Alsem, A. L. Romasco, T. Clark, R. Polcawich, J. Pulskamp, M. Dubey, R. O. Ritchie, and C. L. Muhlstein, "Fatigue-Induced Grain Coarsening in Nanocrystalline Platinum Films", *Acta Materialia*, vol. 59 (3) Feb. 2011, pp. 1141-1149.
617. M. D. Demetriou, M. E. Launey, G. Garret, J. P. Schramm, D. C. Hofmann, W. L. Johnson, and R. O. Ritchie, "A Damage Tolerant Glass", *Nature Materials*, vol. 10 (2), Feb. 2011, pp. 123-128.
618. M. Shahnazari, W. Yao, B. Panganiban, R. O. Ritchie, Y. Hagar, and N. E. Lane, "Differential Maintenance of Cortical and Cancellous Bone Strength following Discontinuation of Bone Active Agents", *Journal of Bone and Mineral Research*, vol. 26 (3), March 2011, pp. 569-581.

619. A. Runciman, D. Xu, A. R. Pelton, and R. O. Ritchie, "An Equivalent Strain/Coffin-Manson Approach to Multiaxial Fatigue and Life Prediction in Superelastic Nitinol Medical Devices", *Biomaterials*, vol. 32 (22), Aug. 2011, pp. 4987-4993.
620. S. S. Ionova-Martin, J. M. Wade, S. Tang, M. Shahnazari, J. W. Ager III, N. E. Lane, W. Yao, T. Alliston, C. Vaisse, and R. O. Ritchie, "Changes in Cortical Bone Response to High-Fat Diet from Adolescence to Adulthood in Mice", *Osteoporosis International*, vol. 22 (8), Aug. 2011, pp. 2283-2293.
621. K. J. Koester, H. D. Barth, and R. O. Ritchie, "Effect of Aging on the Transverse Toughness of Human Cortical Bone: Evaluation by R-Curves", *Journal of the Mechanical Behavior of Biomedical Materials*, vol. 4 (7), Oct. 2011, pp. 1504-1513.
622. E. A. Zimmermann, E. Schaible, H. Bale, H. D. Barth, S. Y. Tang, P. Reichert, B. Busse, T. Alliston, J. W. Ager III, and R. O. Ritchie, "Age-Related Changes in the Plasticity and Toughness of Human Cortical Bone at Multiple Length-Scales", *Proceedings of the National Academy of Sciences (PNAS)*, vol. 108 (35), Aug. 2011, pp. 14416-14421.
623. M. Barney, D. Xu, S. W. Robertson, V. Schroeder, R. O. Ritchie, A. R. Pelton, and A. Mehta, "Impact of Thermomechanical Texture on the Superelastic Response of Nitinol Implants", *Journal of the Mechanical Behavior of Biomedical Materials*, vol. 4 (7), Oct. 2011, pp. 1431-1439.
624. R. O. Ritchie, "The Conflicts between Strength and Toughness", *Nature Materials*, vol. 10 (11), Nov. 2011, pp. 817-822.
625. H. D. Barth, E. A. Zimmermann, E. Schaible, S. Y. Tang, T. Alliston, and R. O. Ritchie, "Characterization of the Effects of X-Ray Irradiation on the Hierarchical Structure and Mechanical Properties of Human Cortical Bone", *Biomaterials*, vol. 32 (34), Dec. 2011, pp. 8892-8904.
626. Y. Murakami and R. O. Ritchie, "Effect of Hydrogen on Fatigue-Crack Propagation in Steels", in *Gaseous Hydrogen Embrittlement of Materials in Energy Technologies*, R. P. Gangloff and B. P. Somerday, eds., Woodhead Publishing Ltd., Cambridge, U.K., 2012, vol. 1, pp. 379-417.
627. R. O. Ritchie, E. A. Zimmermann, H. D. Barth and H. A. Bale, "Biological Degradation of the Hierarchical Structure and Fracture Properties of Human Bone", *Proceedings of the 19th European Conference on Fracture (ECF-19)*, R. Goldstein, ed., 2012.
628. J. A. Lemberg, M. R. Middlemas, T. Weingärtner, B. Gludovatz, J. K. Cochran, and R. O. Ritchie "On the Fracture Toughness of Fine-Grained Mo-3Si-1B (wt.%) Alloys at Ambient to Elevated (1300°C) Temperatures", *Intermetallics*, vol. 20 (1), Jan. 2012, pp. 141-154.
629. H. Bale, M. Blacklock, M. R. Begley, D. B. Marshall, B. N. Cox, and R. O. Ritchie, "Characterizing Three-Dimensional Textile Ceramic Composites using Synchrotron X-Ray Computed Micro-Tomography", *Journal of the American Ceramic Society*, vol. 95 (1), Jan. 2012, pp. 392-402.
630. S. W. Robertson, A. R. Pelton, and R. O. Ritchie, "Mechanical Fatigue and Fracture of Nitinol", *International Materials Reviews*, vol. 57 (1), Jan. 2012, pp. 1-37.
631. K. E. Thomson, D. Jiang, W. Yao, R. O. Ritchie, and A. K. Mukherjee, "Characterization and Mechanical Testing of Alumina-Based Nanocomposites Reinforced with Niobium and/or Carbon Nanotubes Fabricated by Spark Plasma Sintering", *Acta Materialia*, vol. 60 (2), Jan. 2012, pp. 622-632.
632. D. Olvera, E. A. Zimmermann, and R. O. Ritchie, "Mixed-Mode Toughness of Human Cortical Bone Containing a Longitudinal Crack in Compression", *Bone*, vol. 50 (1), Jan. 2012, pp. 331-336.

633. Z. Wang, P. Marcolongo, J. A. Lemberg, B. Panganiban, J. W. Evans, R. O. Ritchie, and P. K. Wright, "Fatigue as a Mechanism of Water Tree Propagation in TR-XLPE", *IEEE Transactions on Dielectrics and Electrical Insulation*, vol. 19 (1), Feb. 2012, pp. 321-330.
634. M. Guan, W. Yao, R. Liu, K. S. Lam, J. Nolta, J. Jia, B. Panganiban, L. Meng, P. Zhou, M. Shahnazari, R. O. Ritchie, and N. E. Lane, "Directing Mesenchymal Stem Cells to Bone to Augment Bone Formation and Increase Bone Mass", *Nature Medicine*, vol. 18 (3), March 2012, pp. 456-462.
635. M. L. Martin, B. P. Somerday, R. O. Ritchie, P. Sofronis and I. M. Robertson, "Hydrogen-Induced Intergranular Failure in Nickel Revisited", *Acta Materialia*, vol. 60 (6-7), April 2012, pp. 2739-2745.
636. D. H. Alsem, H. Xiang, R. O. Ritchie, and K. Komvopoulos, "Sidewall Adhesion and Sliding Contact Behavior of Polycrystalline Silicon Microdevices Operated in High Vacuum", *Journal of Microelectromechanical Systems*, vol. 21 (2), April 2012, pp. 359-369.
637. E. A. Zimmermann, H. D. Barth and R. O. Ritchie, "On the Multiscale Origins of Fracture Resistance in Human Bone and its Biological Degradation", *Journal of Materials (JOM)*, vol. 64 (4), April 2012, pp. 486-493.
638. J. A. Lemberg and R. O. Ritchie, "Mo-Si-B Alloys for Ultrahigh-Temperature Structural Applications", *Advanced Materials*, vol. 24 (26), July 2012, pp. 3445-3480.
639. M. R. Begley, N. R. Philips, B. G. Compton, D. V. Wilbrink, R. O. Ritchie and M. Utz, "Mechanical Models to Guide the Development of Synthetic 'Brick and Mortar' Composites", *Journal of the Mechanics and Physics of Solids*, vol. 60 (8), Aug. 2012, pp. 1545-1560.
640. I. Altenberger, R. K. Nalla, Y. Sano, L. Wagner and R. O. Ritchie, "On the Effect of Deep-Rolling and Laser-Peening on the Stress-Controlled Low- and High-Cycle Fatigue Behavior of Ti-6Al-4V at Elevated Temperatures up to 550°C", *International Journal of Fatigue*, vol. 44, Nov. 2012, pp. 292-302.
641. J. Regelsberger, P. Milovanovic, T. Schmidt, M. Hahn, E. Zimmermann, M. Tsokos, J. Zustin, R. O. Ritchie, M. Amling, and B. Busse, "Changes to the Cell, Tissue and Architecture Levels in Cranial Suture Synostosis Reveal a Problem of Timing in Bone Development", *eCells and Materials Journal*, vol. 24, Dec. 2012, pp. 441-458.
642. B. Cox, H. Bale, M. Blacklock, B.-C. Do, D. Marshall, R. Ritchie, Q. Yang, F. Zok, and R. Rinaldi, "A Pipeline Approach to Developing Virtual Tests for Composite Materials", *Proceedings of the 13th International Conference on Fracture*, Beijing, China, 2013.
643. R. O. Ritchie and M. E. Launey, "Crack Growth in Brittle and Ductile Solids", in *Encyclopedia of Tribology*, Q. Jane Wang and Yip Wah Chung, eds., Springer Science, AZ Dordrecht, The Netherlands, 2013, pp. 596-605.
644. M. E. Launey and R. O. Ritchie, "Crack Growth in Noncrystalline Solids", in *Encyclopedia of Tribology*, Q. Jane Wang and Yip Wah Chung, eds., Springer Science, AZ Dordrecht, The Netherlands, 2013, pp. 606-612.
645. B. N. Cox, H. A. Bale, M. Blacklock, T. Fast, M. Novak, V. Rajan, R. Rinaldi, R. O. Ritchie, M. Rossol, J. Shaw, Q. D. Yang, F. Zok, and D. B. Marshall, "Stochastic Virtual Test Systems for Ceramic Composites", *Proceedings, Composites Week @ Leuven and TexComp-11 Conference*, Leuven, Austria, Aug. 2013.
646. J. Jia, Wei Yao, S. Amugongo, M. Shahnazari, W. Dai, Y. E. Lay, D. Olvera, E. A. Zimmermann, R. O. Ritchie, C. S. Li, T. Alliston and N. E. Lane, "Prolonged Alendronate Treatment Prevents the Decline in Serum TGF- β 1 Levels and Reduces Cortical Bone Strength in Long-Term Estrogen Deficiency Rat Model", *Bone*, vol. 52 (1), Jan. 2013, pp. 424-432.
647. W. Yang, I. H. Chen, B. Gludovatz, E. A. Zimmermann, R. O. Ritchie and M. A. Meyers, "Natural Flexible Dermal Armor", *Advanced Materials*, vol. 25 (1), Jan. 2013, pp. 31-48.

648. H. A. Bale, A. Haboub, A. A. MacDowell, J. R. Nasiatka, D. L. Parkinson, B. N. Cox, D. B. Marshall and R. O. Ritchie, "Real-Time Quantitative Imaging of Failure Events in Materials under Load at Temperatures above 1600°C", *Nature Materials*, vol. 12 (1), Jan. 2013, pp. 40-46; doi.org/10.1038/nmat3497.
649. W. Yang, B. Gludovatz, E. A. Zimmermann, H. A. Bale, R. O. Ritchie and M. A. Meyers, "Structure and Fracture Resistance of Alligator Gar (*Atractosteus Spatula*) Armored Fish Scales", *Acta Biomaterialia*, vol. 9 (4), April 2013, pp. 5876-5889.
650. B. Busse, H. A. Bale, E. A. Zimmermann, B. Panganiban, H. D. Barth, A. Carriero, E. Vettorazzi, J. Zustin, M. Hahn, J. W. Ager III, K. Püschel, M. Amling and R. O. Ritchie, "Vitamin-D Deficiency Induces Early Signs of Aging in Human Bone, Increasing the Risk of Fracture", *Science Translational Medicine*, vol. 5 (193), July 10, 2013, p. 193ra88.
651. B. Ettinger, D. B. Burr, and R. O. Ritchie, "Proposed Pathogenesis for Atypical Femoral Fractures: Lessons from Materials Research", *Bone*, vol. 55 (2), Aug. 2013, pp. 495-500.
652. M. N. Rossol, J. Shaw, H. Bale, R. O. Ritchie, D. B. Marshall and F. W. Zok, "Characterizing Weave Geometry in Textile Ceramic Composites using Digital Image Correlation", *Journal of the American Ceramic Society*, vol. 96 (8), Aug. 2013, pp. 2362-2365.
653. S. N. Raja, A. C. K. Olson, K. Thorkelsson, A. J. Luong, L. Hsueh, B. Gludovatz, G. Chang, J. J. Huang, J. Zhang, D. Jang, A. Y. Lu, T. Xu, L. Lin, R. O. Ritchie and A. P. Alivisatos, "Tetrapod Nanocrystals as Fluorescent Stress Probes of Electrospun Nanocomposites", *Nano Letters*, vol. 13 (8), Aug. 2013, pp. 3915-3922.
654. I. Gurevitch, R. Buonsanti, A. Teran, B. Gludovatz, R. O. Ritchie, R. Cabana and N. Balsara, "TiO₂-SEO Block Copolymer Nanocomposites as Solid-State Electrolytes for Lithium Metal Batteries", *Journal of Electrochemical Society*, vol. 160 (9), Sept. 2013, pp. A1611-1617.
655. E. Boatman, R. Gronsky, M. B. Goodwin and R. O. Ritchie, "Elucidating the Nanoscale Structure of Dinosaur Bone", *Microscopy Today*, vol. 21 (5), Sept. 2013, pp. 34-39.
656. Wei Yao, M. Guan, J. Jia, W. Dai, Y. E. Lay, S. Amugongo, R. Liu, D. Olivos, M. Saunders, K. Lam, J. Nolta, D. Olvera, R. O. Ritchie and N. E. Lane, "Reversing Bone Loss by Directing Mesenchymal Stem Cells to the Bone", *Stem Cells*, vol. 31 (9), Sept. 2013, pp. 2003-2014.
657. V. Naglieri, H. A. Bale, B. Gludovatz, A. P. Tomsia and R. O. Ritchie, "On the Development of Ice-Templated Silicon Carbide Scaffolds for Nature-Inspired Structural Materials", *Acta Materialia*, vol. 61 (18), Oct. 2013 pp. 6948-6957.
658. E. A. Zimmermann, B. Gludovatz, E. Schaible, N. K. N. Dave, W. Yang, M. A. Meyers and R. O. Ritchie, "Mechanical Adaptability of the Bouligand-Type Structure in Natural Dermal Armour", *Nature Communications*, vol. 4, Oct. 2013, pp. 2634; doi.org/10.1038/ncomms3634.
659. B. Gludovatz, M. D. Demetriou, M. Floyd, A. Hohenwarter, W. L. Johnson and R. O. Ritchie, "Enhanced Fatigue Endurance of Metallic Glasses through a "Staircase-like" Fracture Mechanism", *Proceedings of the National Academy of Sciences (PNAS)*, vol. 110 (46), Nov. 2013, pp. 18419-18424.
660. S. E. Naleway, R. B. Greene, B. Gludovatz, N. K. N. Dave, R. O. Ritchie and J. J. Kruzic, "A Highly Fatigue Resistant Zr-Based Bulk Metallic Glass", *Metallurgical and Materials Transactions A*, vol. 44A (13), Dec. 2013, pp. 5688-5693.
661. B. Delattre, H. Bai, R. O. Ritchie, J. De Coninck, and A. P. Tomsia, "Unidirectional Freezing of Ceramics Suspensions: *In Situ* X-Ray Investigation of the Effects of Additives", *ACS Applied Materials and Interfaces*, vol. 6 (1), Jan. 2014, pp. 159-166.
662. B. Gludovatz, S. E. Naleway, R. O. Ritchie and J. J. Kruzic, "Size-Dependent Fracture Toughness of Bulk-Metallic Glasses", *Acta Materialia*, vol. 70, May 2014, pp. 198-207.

663. R. O. Ritchie, "Natural Materials: Armoured Oyster Shells", *Nature Materials*, vol. 13 (5), May 2014, pp. 435-437.
664. S. K. Amugongo, W. Yao, J. Jia, Y.-A. E. Lay, W. Dai, Li Jiang, D. Walsh, C.-S. Li, N. K. N. Dave, D. Olvera, B. Panganiban, R. O. Ritchie and N. E. Lane, "Effects of Sequential Osteoporosis Treatments on Trabecular Bone with Low Bone Mass", *Osteoporosis International*, vol. 25 (6), June 2014, pp. 1735-1750.
665. A. Carriero, E. A. Zimmermann, A. Paluszny, S. Y. Tang, H. Bale, B. Busse, T. Alliston, G. Kazakia, R. O. Ritchie and S. J. Shefelbine, "How Tough is Brittle Bone? Investigating Osteogenesis Imperfecta in Mouse Bone," *Journal of Bone and Mineral Research*, vol. 29 (6), June 2014, pp. 1392-1401.
666. B. N. Cox, H. A. Bale, M. Begley, M. Blacklock, B. C. Do, T. Fast, M. Naderi, M. Novak, V. Rajan, R. G. Rinaldi, R. O. Ritchie, M. Rossol, J. Shaw, O. Sudre, Q. D. Yang, F. Zok and D. B. Marshall, "Stochastic Virtual Tests for High Temperature Ceramic Matrix Composites", *Annual Review of Materials Research*, vol. 44, 2014, pp. 479-529.
667. E. A. Zimmermann, B. Gludovatz, E. Schaible, B. Busse and R. O. Ritchie, "Fracture Resistance of Human Cortical Bone Across Multiple Length-Scales at Physiological Strain Rates", *Biomaterials*, vol. 35 (21), July 2014, pp. 5472-5481.
668. M. Genet, G. Couégnat, A. P. Tomsia and R. O. Ritchie, "Scaling Strength Distributions in Quasi-Brittle Materials from Micro to Macro Scales: A Computational Approach to Modeling Nature-Inspired Structural Ceramics", *Journal of Mechanics and Physics of Solids*, vol. 68, Aug. 2014, pp. 93-106.
669. W. Yang, V. Sherman, B. Gludovatz, M. Mackey, E. A. Zimmermann, E. H. Chang, E. Schaible, Z. Qin, M. J. Buehler, R. O. Ritchie and M. A. Meyers, "Protective Role of Arapaima Gigas Fish Scales: Structure and Mechanical Behavior", *Acta Biomaterialia*, vol. 10 (8), Aug. 2014, pp. 3599-3614.
670. A. Haboub, H. A. Bale, J. R. Nasiatka, B. N. Cox, D. B. Marshall, R. O. Ritchie and A. A. MacDowell, "Tensile Testing of Structural Materials at High Temperatures above 1700°C with *In Situ* Synchrotron X-ray Micro-Tomography", *Review of Scientific Instruments*, vol. 85 (8), Aug. 2014, pp. 083702.
671. B. Gludovatz, A. Hohenwarter, D. Cartoor, E. H. Chang, E. P. George and R. O. Ritchie, "A Fracture Resistant High-Entropy Alloy for Cryogenic Applications", *Science*, vol. 345 (6201), Sept. 5, 2014, pp. 1153-1158.
672. S. K. Amugongo, Wei Yao, J. Jia, W. Dai, Y.-A. E. Lay, L. Jiang, D. Harvey, E. A. Zimmermann, E. Schaible, N. Dave, R. O. Ritchie, D. B. Kimmel and N. E. Lane, "Effect of Sequential Treatments with Alendronate, Parathyroid Hormone (1-34) and Raloxifene on Cortical Bone Mass and Strength in Ovariectomized Rats", *Bone*, vol. 67, Oct. 2014 pp. 257-268.
673. R. O. Ritchie, "In Pursuit of Damage Tolerance in Engineering and Biological Materials", *MRS Bulletin*, vol. 39 (10), Oct. 2014, pp. 880-890.
674. A. Carriero, E. A. Zimmermann, S. J. Shefelbine and R. O. Ritchie, "A Methodology for the Investigation of Toughness and Crack Propagation in Mouse Bone", *Journal of the Mechanical Behavior of Biomedical Materials*, vol. 39, Nov. 2014, pp. 38-47.
675. P. Sofronis, A. Nagao, M. Dadfarnia, S. Wang, M. L. Martin, B. P. Somerday, R. O. Ritchie and I. M. Robertson, "Micromechanics of Hydrogen-Induced Fracture: From Experiments and Modelling to Prognosis", *Proceedings of the Fourth International Symposium on Steel Science (ISSS 2014)*, Iron & Steel Institute of Japan, 2015.

676. A. A. MacDowell, H. Barnard, D. Parkinson, A. Haboub, N. Larson, F. Zok, F. Parerai, N. Mansour, H. Bale, B. Gludovatz, C. Acevedo, D. Liu, R. O. Ritchie, “High-Temperature X-Ray Micro-Tomography”, *Proceedings of the Synchrotron Radiation Instrumentation Meeting 2015 (SRI-2015)*, American Institute of Physics, 2015.
677. E. A. Zimmermann, T. Köhne, H. A. Bale, B. Panganiban, B. Gludovatz, J. Zustin, M. Hahn, M. Krause, M. Amling, R. O. Ritchie and B. Busse, “Modifications to Nano- and Microstructural Quality and the Effects on Mechanical Integrity in Paget’s Disease of Bone”, *Journal of Bone and Mineral Research*, vol. 30 (2), February 2015, pp. 264-273.
678. U. G. K. Wegst, H. Bai, E. Saiz, A. P. Tomsia and R. O. Ritchie, “Bioinspired Structural Materials”, *Nature Materials*, vol. 14 (1), January 2015, pp. 23-36.
679. P. Milovanovic, E. A. Zimmermann, C. Riedel, A. vom Scheidt, L. Herzog, M. Krause, D. Djonic, M. Djuric, R. O. Ritchie, M. Amling, K. Püschel and Björn Busse, “Multi-Level Characterization of Human Femoral Cortices and their Underlying Osteocyte Network Reveal Trends in Quality of Young, Aged, Osteoporotic and Antiresorptive-Treated Bone”, *Biomaterials*, vol. 45 (3), March 2015, pp. 46-55.
680. S. N. Raja, S. Basu, A. M. Limaye, T. J. Anderson, C. H. Hyland, L. Lin, A. P. Alivisatos and R. O. Ritchie, “Strain-Dependent Dynamic Mechanical Properties of Kevlar to Failure: Structural Correlations and Comparisons to other Polymers”, *Materials Today Communications*, vol. 2, March 2015, pp. e33-e37.
681. W. Yang, V. R. Sherman, B. Gludovatz, E. Schaible, P. Stewart, R. O. Ritchie and M. A. Meyers, “On the Tear Resistance of Skin”, *Nature Communications*, vol. 6, March 2015, pp. 6649; doi.org/10.1038/ncomms7649.
682. W. Dai, L. Jiang, Y-A. E. Lay, H. Chen, G. Jin, H. Zhang, A. Kot, R. O. Ritchie, N. E. Lane and W. Yao, “Prevention of Glucocorticoid Induced Bone Changes with Beta-Ecdysone”, *Bone*, vol. 74, May 2015, pp. 58-57.
683. S. N. Raja, A. C. K. Olson, A. M. Limaye, K. Thorkelsson, A. J. Luong, L. Lin, R. O. Ritchie, T. Xu and A. P. Alivisatos, “Influence of Three-Dimensional Nanoparticle Branching on the Young’s Modulus of Nanocomposites: Effect of Interface Orientation”, *Proceedings of the National Academy of Sciences (PNAS)*, vol. 112 (21), May 26, 2015, pp. 6533-6538.
684. E. A. Zimmermann and R. O. Ritchie, “Bone as a Structural Material”, *Advanced Healthcare Materials*, vol. 4 (9), June 2015, pp. 1287-1304.
685. W. Dai, H. L. Zhang, Z. A. Zhong, L. Jiang, H. Chen, Y-A. E. Lay, A. Kot, R. O. Ritchie, N. E. Lane and W. Yao, “ β -Ecdysone Augments Peak Bone Mass in Mice of Both Sexes”, *Clinical Orthopaedics and Related Research*, vol. 473 (8), Aug. 2015, pp. 2495-2504.
686. E. A. Zimmermann, B. Busse and R. O. Ritchie, “The Fracture Mechanics of Human Bone: Influence of Disease and Treatment”, *BoneKEy Reports*, vol. 4, article no. 743, Sept. 2015; doi.org/10.1038/bonekey.2015.112.
687. V. Naglieri, B. Gludovatz, A. P. Tomsia and R. O. Ritchie, “Developing Strength and Toughness in Bio-Inspired Silicon Carbide Hybrid Materials Containing a Compliant Phase”, *Acta Materialia*, vol. 98 (10), Oct. 2015, pp. 141-151; doi: 10.1016/j.actamat.2015.07.022.
688. B. Gludovatz, E. P. George and R. O. Ritchie, “Processing, Microstructure and Mechanical Properties of the CrMnFeCoNi High-Entropy Alloy”, *Journal of Materials (JOM)*, vol. 67 (10), Oct. 2015, pp. 2262-2270.
689. J. Ding, E. Ma, M. Asta and R. O. Ritchie, “Second Nearest-Neighbor Correlations from Connection of Atomic Packing Motifs in Metallic Glasses and Liquids”, *Scientific Reports*, vol. 5, Nov. 30, 2015, pp.17429; doi.org/10.1038/srep.17429.

690. C. Acevedo, H. Bale, B. Gludovatz, A. Wat, S. Y. Tang, M. Wang, B. Busse, E. A. Zimmermann, E. Schaible, M. R. Allen, D. B. Burr and R. O. Ritchie, "Alendronate Treatment Alters Bone Tissues at Multiple Structural Levels in Healthy Canine Cortical Bone", *Bone*, vol. 81, Dec. 2015, pp. 352-363.
691. H. Bai, Y. Chen, B. Delattre, A. P. Tomsia and R. O. Ritchie, "Bioinspired Large-Scale Aligned Porous Materials Assembled with Dual Temperature Gradients", *Science Advances*, vol. 1 (11), Dec. 4, 2015, pp. e1500849; doi.org/10.1126/sciadv.1500849.
692. Z.-J. Zhang, M. M. Mao, J. Wang, H. Tian, B. Gludovatz, Z. Zhang, S. X. Mao, E. P. George, Q. Yu and R. O. Ritchie, "Nanoscale Origins of the Damage Tolerance of the High-Entropy Alloy CrMnFeCoNi", *Nature Communications*, vol. 6, Dec. 9, 2015, pp. 10143; doi.org/10.1038/ncomms10143.
693. A. A. MacDowell, H. Barnard, D. Y. Parkinson, A. Haboub, N. Larson, F. Zok, F. Parerai, N. N. Mansour, H. Bale, B. Gludovatz, C. Acevedo, D. Liu and R. O. Ritchie, "High Temperature X-Ray Micro-Tomography", 12th International Conference on Synchrotron Radiation Instrumentation - SRI2015, *AIP Conference Proceedings* vol. 1741, July 27, 2016, p. 050005; doi.org/10.1063/1.4952925.
694. H. Bai, F. Walsh, B. Gludovatz, B. Delattre, C. Huang, Y. Chen, A. P. Tomsia and R. O. Ritchie, "Bioinspired Hydroxyapatite/Poly(Methyl Methacrylate) Composite with Nacre-Mimetic Architecture by a Bidirectional Freezing Method", *Advanced Materials*, vol. 28 (1), Jan. 6, 2016, pp. 50-56.
695. W. Yao, W. Dai, Li Jiang, E. Yu-An Lay, Z. Zhong, R. O. Ritchie, X. Li, H. Ke; N. E. Lane, "Sclerostin-Antibody Treatment of Glucocorticoid-Induced Osteoporosis Maintained Bone Mass and Strength", *Osteoporosis International*, vol. 27 (1), Jan. 2016, pp. 283-294.
696. A. Shekhawat and R. O. Ritchie, "Toughness and Strength of Nanocrystalline Graphene", *Nature Communications*, vol. 7, Jan. 28, 2016, pp. 10546; doi.org/10.1038/ncomms10546.
697. E. A. Zimmermann, E. Schaible, B. Gludovatz, F. Schmidt, C. Acevedo, M. Hahn, K. Püschel, S. Tang, M. Amling, R. O. Ritchie and B. Busse, "Intrinsic Mechanical Behavior of Human Femoral Cortical Bone Following Bisphosphonate Treatment", *Scientific Reports*, vol. 6, Feb. 2016, pp. 21072; doi.org/10.1038/srep21076.
698. B. Gludovatz, A. Hohenwarter, K. V. S. Thurston, H. Bei, Z. Wu, E. P. George and R. O. Ritchie, "Exceptional Damage-Tolerance of a Medium-Entropy Alloy CrCoNi at Cryogenic Temperatures", *Nature Communications*, vol. 7, Feb. 2, 2016, pp. 10602; doi.org/10.1038/ncomms10602.
699. S. N. Raja, A. J. Luong, W. Zhang, L. Lin, R. O. Ritchie and A. P. Alivisatos, "Cavitation-Induced Stiffness Reductions in Quantum Dot Polymer Nanocomposites", *Chemistry of Materials*, vol. 28 (8), April 2016, pp. 2540-2549.
700. J. Ding, M. Asta and R. O. Ritchie, "Anomalous Structure-Property Relationships in Metallic Glasses Through Pressure-Mediated Glass Formation", *Physical Review B*, vol. 93, April 8, 2016, pp. 140204(R); doi: 10.1103/PhysRevB.93.140204.
701. A. Shekhawat, C. Ophus and R. O. Ritchie, "A Generalized Read-Shockley Model and Larger Scale Simulations for the Energy and Structure of Graphene Grain Boundaries", *RSC Advances*, vol. 6 (50), 2016, pp. 44489-44497; doi.org/10.1039/c6ra07584c.
702. F-F. Shi, Z. Song, P. N. Ross, G. A. Somorjai, R. O. Ritchie and K. Komvopoulos, "Failure Mechanisms of Single-Crystal Silicon Electrodes in Lithium-Ion Batteries", *Nature Communications*, vol. 7, June 14, 2016, pp. 11886; doi.org/10.1038/ncomms11886.

703. F. Ansari, B. Gludovatz, A. Kozak, R. O. Ritchie and L. A. Pruitt, “Notch Fatigue of Ultrahigh Molecular Weight Polyethylene (UHMWPE) used in Total Joint Replacements: A Linear-Elastic Fracture Mechanics Approach”, *Journal of the Mechanical Behavior of Biomedical Materials*, vol. 60, July 2016, pp. 267-279.
704. E. J. Jáuregui, O. Akil, C. Acevedo, F. Hall-Glenn, B. S. Tsai, H. A. Bale, R. O. Ritchie, L. R. Lustig, T. Alliston, “Parallel Mechanisms Suppress Cochlear Bone Remodeling to Protect Hearing”, *Bone*, vol. 89, Aug. 2016, pp. 7-15.
705. S. N. Raja, D. Zherebetsky, S. Wu, P. Ercius, A. Powers, A. C. K. Olson, D. X. Du, L. Lin, S. Govindjee, L.-W. Wang, T. Xu, A. P. Alivisatos and R. O. Ritchie, “Mechanisms of Local Stress-Sensing in Multifunctional Polymer Films using Fluorescent Tetrapod Nanocrystals”, *Nano Letters*, vol. 16 (8), Aug., 2016, pp 5060–5067.
706. R. B. Ladani, A. R. Ravindran, S. Wu, K. Pingkarawat, A. J. Kinloch, A. P. Mouritz, R. O. Ritchie and C. H. Wang, “Multi-Scale Toughening of Fibre Composites using Carbon Nanofibres and Z-Pins”, *Composites Science & Technology*, vol. 131, Aug. 2, 2016, pp. 98-109.
707. K. Yang, R. O. Ritchie, Y. Gu, S. J. Wu and J. Guan, “High Volume-Fraction Silk Fabric Reinforcements Can Improve the Key Mechanical Properties of Epoxy Resin Composites”, *Materials and Design*, vol. 108, Oct. 15, 2016, pp. 470-478.
708. Z. Q. Liu, Y. K. Zhu, D. Jiao, Z. Y. Weng, Z. F. Zhang and R. O. Ritchie, “Enhanced Protective Role in Materials with Gradient Structural Orientations: Lessons from Nature”, *Acta Biomaterialia*, vol. 44, Oct. 15, 2016, pp. 31-50.
709. D. Ushizima, H. A. Bale, W. Bethel, P. Ercius, B. Helms, H. Krishnam, L. Grinberg, M. Haranczyk, A. A. Macdowell, K. Odziomek, D. L. Parkinson, T. Perciano, R. O. Ritchie and C. Yang, “IDEAL: Images Across Domains, Experiments, Algorithms and Learning”, *Journal of Materials (JOM)*, vol. 68 (11), Nov. 2016, pp. 2963-2972.
710. R. Wilkerson, B. Gludovatz, J. Watts, A. P. Tomsia, G. E. Hilmas and R. O. Ritchie, “A Novel Approach to Developing Biomimetic (“Nacre-Like”) Metal-Compliant-Phase (Nickel-Alumina) Ceramics Through Coextrusion”, *Advanced Materials*, vol. 28 (45) Dec. 7, 2016, pp. 10061–10067.
711. J. Ding, Y.-Q. Cheng, H. Sheng, M. Asta, R. O. Ritchie and E. Ma, “Universal Structural Parameter to Quantitatively Predict Metallic Glass Properties”, *Nature Communications*, vol. 7, Dec. 7, 2016, p. 13733; doi.org/10.1038/ncomms13733.
712. Z. Y. Weng, Z. Q. Liu, R. O. Ritchie, D. Jiao, D. S. Li, H. L. Wu, L. H. Deng and Z. F. Zhang, “Giant Panda’s Tooth Enamel: Structure, Mechanical Behavior and Toughening Mechanisms under Indentation”, *Journal of the Mechanical Behavior of Biomedical Materials*, vol. 64, Dec. 2016, pp. 125-138.
713. S. N. Raja, Y. Bekenstein, M. A. Koc, S. Fischer, D. Zhang, L. Lin, R. O. Ritchie, P. Yang and A. P. Alivisatos, “Encapsulation of Perovskite Nanocrystals into Macroscale Polymer Matrices: Enhanced Stability and Polarization”, *ACS Applied Materials & Interfaces*, vol. 8 (51), Dec. 2016, pp. 35523–35533.
714. H. S. Barnard, A. A. MacDowell, D. Y. Parkinson, P. Mandal, M. Czabaj, Y. Gao, E. Maillet, B. Blank, N. M. Larson, R. O. Ritchie, B. Gludovatz, C. Acevedo and D. Liu, “Synchrotron X-ray Micro-Tomography at the Advanced Light Source: Developments in *In-Situ* Mechanical Testing”, *Journal of Physics Conf. Series* 849, 2017, p. 012043; doi.org/10.1088/1742-6596/849/1/012043.
715. B. Gludovatz, D. Granata, K. V. S. Thurston, J. F. Löffler and R. O. Ritchie, “On the Understanding of the Effects of Sample Size on the Variability in Fracture Toughness of Bulk-Metallic Glasses”, *Acta Materialia*, vol. 126, March 2017, pp. 494-506; doi.org/10.1016/j.actamat.2016.12.054.

716. Z. Zhang, H. Sheng, Z. Wang, B. Gludovatz, Z. Zhang, E. P. George, Q. Yu, S. X. Mao and R. O. Ritchie, "Dislocation Mechanisms and 3-D Twin Architectures Generate the Exceptional Strength, Ductility and Toughness in the CrCoNi Medium-Entropy Alloy", *Nature Communications*, vol. 8, Feb. 20, 2017, p. 14390; doi.org/10.1038/ncomms14390.
717. M. A. Koc, S. N. Raja, L. A. Hanson, S. C. Nguyen, N. J. Borys, A. S. Powers, S. Wu, K. Takano, J. K. Swabeck, J. H. Olshansky, L. Lin, R. O. Ritchie and A. P. Alivisatos, "Characterizing Proton Resorption in Quantum Dot-Polymer Composites for Use as Displacement Sensors", *ACS Nano*, vol. 11 (2), Feb. 28, 2017, pp. 2075-2084; doi.org/10.1021/acsnano.6b08277.
718. T. W. Fowler, C. Acevedo, C. Mazur, F. Hall-Glenn, A. Fields, H. A. Bale, R. O. Ritchie, J. Lotz, T. Vail and T. Alliston, "Glucocorticoid Suppression of Osteocyte Perilacunar Remodeling is Associated with Subchondral Bone Degeneration and Osteonecrosis", *Scientific Reports*, vol. 7, March 22, 2017, p. 44618; doi.org/10.1038/srep44618.
719. B. Xu, S. Yin, Y. Wang, H. Li, B. Zhang and R. O. Ritchie, "Long-Fiber Reinforced Thermoplastic Composite Lattice Structures: Fabrication and Compressive Properties", *Composites Part A: Applied Science & Manufacturing*, vol. 97, June 2017, pp. 41-50; doi.org/10.1016/j.compositesa.2017.03.002.
720. D. Liu, B. Gludovatz, H. S. Barnard, M. Kuball and R. O. Ritchie, "Damage Tolerance of Nuclear Graphite at Elevated Temperatures", *Nature Communications*, vol. 8, June 30, 2017, p. 15942; doi.org/10.1038/ncomms15942.
721. M. Dadfarnia, A. Nagao, B. P. Somerday, P. E. Schembri, J. W. Foulk, K. A. Nibur, D. K. Balch, R. O. Ritchie and P. Sofronis, "Modeling Hydrogen-Induced Fracture and Crack Propagation in High Strength Steels", in "Materials Performance in Hydrogen Environments", *Proceedings of the 2016 Intl. Hydrogen Conference*, Jackson Lake Lodge, Moran, WY, American Society for Mechanical Engineers, Warrendale, PA, 2017, pp. 572-580.
722. Z. Liu, M. A. Meyers, Z. Zhang and R. O. Ritchie, "Functional Gradients and Heterogeneities in Biological Materials: Design Principles, Functions, and Bioinspired Applications", *Progress in Materials Science*, vol. 88, July 2017, pp. 467-498; doi.org/10.1016/j.pmatsci.2017.04.013.
723. J. Ding, M. Asta and R. O. Ritchie, "On the Question of Fractal Packing Structure in Metallic Glasses", *Proceedings of the National Academy of Sciences (PNAS)*, vol. 114 (32), Aug. 8, 2017, pp. 8458-8463; doi.org/10.1073/pnas.1705723114.
724. A. A. Lloyd, B. Gludovatz, C. Riedel, E. A. Luengo, R. Saiyed, E. Marty, D. G. Lorich, J. M. Lane, R. O. Ritchie, B. Busse and E. Donnelly, "Atypical Fracture with Long-Term Bisphosphonate Therapy is Associated with Altered Cortical Composition and Reduced Fracture Resistance", *Proceedings of the National Academy of Sciences (PNAS)*, vol. 114 (33), Aug. 15, 2017, pp. 8722-8727; doi.org/10.1073/pnas.1704460114.
725. K. V. S. Thurston, B. Gludovatz, A. Hohenwarter, G. Laplanche, E. P. George and R. O. Ritchie, "Effect of Temperature on the Fatigue-Crack Growth Behavior of the High-Entropy Alloy CrMnFeCoNi", *Intermetallics*, vol. 88, Sept. 2017, pp. 65-72; doi.org/10.1016/j.intermet.2017.05.009.
726. V. R. Sherman, H. Quan, W. Yang, R. O. Ritchie and M. A. Meyers, "A Comparative Study of Piscine Defense: The Scales of *Arapaima Gigas*, *Latimeria Chalumnae* and *Atractosteus Spatula*", *Journal of the Mechanical Behavior of Biomedical Materials*, vol. 73, Sept. 2017, pp. 1-16; doi.org/10.1016/j.jmbbm.2016.10.001.

727. *K. Yang, S.-J. Wu, J. Guan, Z. Shao and R. O. Ritchie, "Enhancing the Mechanical Toughness of Epoxy-Resin Composites Using Natural Silk Reinforcements", *Scientific Reports*, vol. 7, Sept. 20, 2017, pp. 11939; doi.org/10.1038/s41598-017-11919-1.
728. N. S. Dole, C. M. Mazur, C. Acevedo, J. P. Lopez, D. A. Monteiro, T. W. Fowler, B. Gludovatz, F. Walsh, J. N. Regan, S. Messina, D. S. Evans, T. F. Lang, B. Zhang, R. O. Ritchie, K. S. Mohammad and T. Alliston, "Osteocyte Intrinsic TGF β Signaling Regulates Bone Quality Through Perilacunar Remodeling", *Cell Reports*, vol. 21 (9), Nov. 28, 2017, pp. 2585-2596; doi.org/10.1016/j.celrep.2017.10.115.
729. B. Gludovatz, F. Walsh, E. A. Zimmermann, S. E. Naleway, R. O. Ritchie and J. J. Kruzic, "Multiscale Structure and Damage Tolerance of Coconut Shells", *Journal of the Mechanical Behavior of Biomedical Materials*, vol. 76, Dec. 2017, pp. 76-84; doi.org/10.1016/j.jmbbm.2017.05.024.
730. Z. Q. Liu, J. H. Liu, M. D. Biegalski, J.-M. Hu, S. L. Shang, Y. Ji, J. M. Wang, S.-L. Hsu, A. T. Wong, M. Cordill, B. Gludovatz, C. Marker, H. Yan, Z. Feng, L. You, M.-W. Lin, T. Ward, Z.-K. Liu, C. B. Jiang, L.-Q. Chen, R. O. Ritchie, H. M. Christen and R. Ramesh, "Electrically Reversible Cracks in an Intermetallic Film Controlled by an Electric Field", *Nature Communications*, vol. 9, Jan. 3, 2018, p. 41; doi.org/10.1038/s41467-017-02454.
731. C. Acevedo, V. Stadelmann, D. Pioletti, T. Alliston and R. O. Ritchie, "Fatigue as the Missing Link between Bone Fragility and Fracture", *Nature Biomedical Engineering*, vol. 2 (2), Feb. 2018, pp. 62-71; doi.org/10.1038/s41551-017-0183-9.
732. A. Nagao, M. Dadfarnia, B. P. Somerday, P. Sofronis and R. O. Ritchie, "Hydrogen-Enhanced-Plasticity Mediated Decohesion for Hydrogen-Induced Intergranular and "Quasi-Cleavage" Fracture of Lath Martensitic Steels", *Journal of Mechanics and Physics of Solids*, vol. 112, March 2018, pp. 403-430; doi.org/10.1016/j.jmps.2017.12.016.
733. ^{xi}S. C. Cao, J. Liu, L. Zhu, L. Li, M. Dao, J. Lu and R. O. Ritchie, "Nature-Inspired Hierarchical Steels", *Scientific Reports*, vol. 8, March 23, 2018, p. 5088; doi.org/10.1038/s41598-018-23358-7.
734. Z. P. Smith, J. E. Bachman, T. Li, B. Gludovatz, V. A. Kusuma, T. Xu, D. P. Hopkinson, R. O. Ritchie and J. R. Long, "Increasing $M_2(\text{dobdc})$ Loading in Selective Mixed-Matrix Membranes: A Rubber Toughening Approach", *Chemistry of Materials*, vol. 30 (5), March 13, 2018, pp. 1484-1495; doi.org/10.1021/acs.chemmater.7b0290.
735. S. N. Raja, X. Ye, M. R. Jones, L. Lin, S. Govindjee and R. O. Ritchie, "Microscopic Mechanisms of Deformation Transfer in High Dynamic Range Branched Nanoparticle Deformation Sensors", *Nature Communications*, vol. 9, March 20, 2018, p. 1155; doi.org/10.1038/s41467-018-03396-5.
736. N. Wang, J. Ding, F. Yan, M. Asta, R. O. Ritchie and L. Li, "Spatial Correlation of Elastic Heterogeneity Tunes the Deformation Behavior of Metallic Glasses", *npj Computational Materials*, vol. 4, April 6, 2018, p. 19; doi.org/10.1038/s41524-018-0077-8.
737. R. P. Wilkerson, B. Gludovatz, J. Watts, A. P. Tomsia, G. E. Hilmas and R. O. Ritchie, "A Study of Size Effects in Bioinspired, "Nacre-Like", Metal-Compliant-Phase (Nickel-Alumina) Coextruded Ceramics", *Acta Materialia*, vol. 148, April 15, 2018, pp. 147-155; doi.org/10.1016/j.actamat.2018.01.046.
738. C. Acevedo, M. Sylvia, E. Schaible, J. L. Graham, L. N. Metz, B. Gludovatz, A. V. Schwartz, R. O. Ritchie, T. N. Alliston, P. J. Havel and A. J. Fields, "Contributions of Material Properties and Structure to Bone Fragility in the UCD-T2DM Rat Model of Type 2 Diabetes", *Journal of Bone and Mineral Research*, vol. 33 (6), June 2018, pp. 1066-1075; doi.org/10.1002/jbmr.3393.

^x One of the Top 100 Articles in *Scientific Reports* for 2017.

^{xi} One of the Top 100 Articles in *Scientific Reports* for 2018

739. B. Wang, L. Luo, E. Guo, Y. Su, M. Wang, R. O. Ritchie, F. Y. Dong, L. Wang, J. J. Guo and H. Fu, “Nanometer-Scale Gradient Atomic Packing Structure Surrounding Soft Spots in Metallic Glasses”, *npj Computational Materials*, vol. 4, July 30, 2018, p. 41; doi.org/10.1038/s41524-018-0097-4.
740. Z. Liu, Z. Zhang and R. O. Ritchie, “On the Materials Science of Nature’s Arms Race”, *Advanced Materials*, vol. 30 (32), August 9, 2018, p. 1705220; doi.org/10.1002/adma.201705220.
741. J. Ding, Q. Yu, M. Asta and R. O. Ritchie, “Tunable Stacking Fault Energies by Tailoring Local Chemical Order in CrCoNi Medium-Entropy Alloys”, *Proceedings of the National Academy of Sciences (PNAS)*, vol. 115 (36), Sept. 4, 2018, pp. 8919-8924; doi.org/10.1073/pnas.1808660115.
742. J. Ding, M. Asta and R. O. Ritchie, “Melts of CrCoNi-Based High-Entropy Alloys: Atomic Diffusion and Electronic/Atomic Structure from *Ab Initio* Simulation”, *Applied Physics Letters*, vol. 113 (11), September 10, 2018, p. 111902; doi.org/10.1063/1.5045216.
743. Z. Liu, Z. Weng, Z.-F. Zhai, N. Huang, Z.-J. Zhang, J. Tan, C. Jiang, D. Jiao, G. Tan, J. Zhang, X. Jiang, Z. Zhang and R. O. Ritchie, “Hydration-Induced Nano- to Micro-Scale Self-Recovery of the Tooth Enamel of the Giant Panda”, *Acta Biomaterialia*, vol. 81, November 2018, pp. 267-277; doi.org/10.1016/j.actbio.2018.09.053.
744. Z. S. Hosseini, M. Dadfarnia, B. P. Somerday, P. Sofronis and R. O. Ritchie, “On the Theoretical Modeling of Fatigue Crack Growth”, *Journal of the Mechanics and Physics of Solids*, vol. 121, December 2018, pp. 341-362; doi.org/10.1016/j.jmps.2018.07.026.
745. S. Yin, J. Li, H. Chen, R. O. Ritchie and J. Xu, “Design and Strengthening Mechanisms in Hierarchical Architected Materials Processed using Additive Manufacturing”, *International Journal of Mechanical Sciences*, vol. 149, December 2018, pp. 150-163; doi.org/10.1016/j.ijmecsci.2018.09.038.
746. H. Quan, W. Yang, E. Schaible, R. O. Ritchie and M. A. Meyers, “Novel Defense Mechanisms in the Armor of the Scales of the “Living Fossil” Coelacanth Fish”, *Advanced Functional Materials*, vol. 28 (46), 2018, p. 1804237; doi.org/10.1002/adfm.201804237.
747. R. O. Ritchie, “Mechanistic Aspects of the Damage-Tolerance of Advanced of Advanced Multiple-Element Metallic Alloys and the Legacy of John Knott”, in *Structural Integrity and Materials in Nuclear Power Plants*, R. A. Ainsworth and P. J. E. Flewitt, eds., FESI Publishing, Preston, U.K., 2019, pp. 1-8.
748. R. P. Wilkerson, B. Gludovatz, J. Ell, J. Watts, G. E. Hilmas and R. O. Ritchie, “High-Temperature Damage-Tolerance of Coextruded, Bioinspired (“Nacre-Like”), Alumina/Nickel Compliant-Phase Ceramics”, *Scripta Materialia*, vol. 158, January 2019, pp. 110-115; doi.org/10.1016/j.scriptamat.2018.08.046.
749. L. G. Malito, J. V. Sov, B. Gludovatz, R. O. Ritchie and L. A. Pruitt, “Fracture Toughness of Ultra-High Molecular Weight Polyethylene: A Basis for Defining the Crack-Initiation Toughness in Polymers”, *Journal of the Mechanics and Physics of Solids*, vol. 122, Jan. 2019, pp. 435-449; doi.org/10.1016/j.jmps.2018.09.022.
750. C. Wu, K. Yang, Y. Gu, J. Xu, R. O. Ritchie and J. Guan, “Mechanical Properties and Impact Performances of Silk-Epoxy Resin Composites Modulated by Flax Fibres”, *Composites: Part A*, vol. 17, Feb. 2019, pp. 357-368; doi.org/10.1016/j.compositesa.2018.12.003.
751. M. Zhang, D. Jiao, G. Tan, J. Zhang, S. Wang, J. Wang, Z. Liu, Z. Zhang and R. O. Ritchie, “Strong, Fracture-Resistant Biomimetic Silicon Carbide Composites with Laminated Interwoven Nanoarchitectures Inspired by the Crustacean Exoskeleton”, *ACS Applied Nano Materials*, vol. 2 (2), Feb. 22, 2019, pp. 1111-1119; doi.org/10.1021/acsanm.9b00063.

752. A. Wat, J. I. Lee, C. W. Ryu, B. Gludovatz, J. Y. Kim, A. P. Tomsia, T. Ishikawa, J. Schmitz, A. Meyer, M. Alfreider, D. Kiener, E. S. Park and R. O. Ritchie, "Bioinspired "Nacre-Like" Alumina/Bulk-Metallic Glass Ceramics", *Nature Communications*, vol. 10, Feb. 27, 2019, p. 961; doi.org/10.1038/s41467-019-08753-6.
753. Z. Liu, Y. Zhang, M. Zhang, G. Tan, Y. Zhu, Z. Zhang and R. O. Ritchie, "Adaptive Structural Reorientation: Developing Extraordinary Mechanical Properties by Constrained Flexibility in Natural Materials", *Acta Biomaterialia*, vol. 86, March 1, 2019 pp. 96-198; doi.org/10.1016/j.actbio.2019.01.010.
754. D. Liu, T. Fabes, B.-S. Li, D. Francis, R. O. Ritchie and M. Kuball, "On the Characterisation of the Interfacial Toughness in a Novel "GaN-on-Diamond" Material for High-Power RF devices", *ACS Applied Electronic Materials*, vol. 1 (3), March 26, 2019, pp. 354-369; doi.org/10.1021/acsaelm.8b00091.
755. S. C. Cao, X. Zhang, Y. Wang, F. Cheng, S.-Q. Shi, J. Lu and R. O. Ritchie, "Predicting Surface Deformation during Mechanical Attrition of Metallic Alloys", *npj Computational Materials*, vol. 5, March 15, 2019, p. 36; doi.org/10.1038/s41524-019-0171-6.
756. F. Wang, X. Yu, M. Ge, S. Wu, J. Guan, J. Tang, X. Wu and R. O. Ritchie, "Facile Self-Assembly Synthesis of γ -Fe₂O₃/Graphene Oxide for Enhanced Photo-Fenton Reaction", *Environmental Pollution*, vol. 248, May 2019, pp. 229-237; doi.org/10.1016/j.envpol.2019.01.018.
757. Z. Li, S. Zhao, R. O. Ritchie and M. A. Meyers, "Mechanical Properties of High-Entropy Alloys with Emphasis on Face-Centered Cubic Alloys", *Progress in Materials Science*, vol. 102, May 2019, pp. 296-345; doi.org/10.1016/j.pmatsci.2018.12.003.
758. Q. Ding, X. Fu, D. Chen, H. Bei, B. Gludovatz, J. Li, Z. Zhang, E. P. George, Q. Yu, T. Zhu and R. O. Ritchie, "Real-time Nanoscale Observation of Deformation Mechanisms in CrCoNi-Based Medium/High-Entropy Alloys at Cryogenic Temperatures", *Materials Today*, vol. 25, May 2019, pp. 21-27; doi.org/10.1016/j.mattod.2019.03.001.
759. S. Yin, H. Wang, J. Li, R. O. Ritchie and J. Xu, "Light but Tough Bio-Inherited Materials: Luffa Sponge Based Nickel-Plated Composites", *Journal of the Mechanical Behavior of Biomedical Materials*, vol. 94, June 2019, pp. 10-18; doi.org/10.1016/j.jmbbm.2019.02.029.
760. W. Yang, M. A. Meyers and R. O. Ritchie, "Structural Architectures with Toughening Mechanisms in Nature: A Review of the Materials Science of Type-I Collagenous Materials", *Progress in Materials Science*, vol. 103, June 2019, pp. 425-483; doi.org/10.1016/j.pmatsci.2019.01.002.
761. W. Huang, A. Zaheri, W. Yang, R. O. Ritchie, H. Espinosa and J. McKittrick, "How Water can Affect Keratin: Hydration-Driven Recovery of Bighorn Sheep (*Ovis Canadensis*) Horns", *Advanced Functional Materials*, vol. 29, 2019, p. 1901077; doi.org/10.1002/adfm.201901077.
762. W. Huang, N. Yaraghi, W. Yang, A. Velazquez-Olivera, Z. Li, R. O. Ritchie, D. Kisailus, S. M. Stover and J. McKittrick, "A Natural Energy Absorbent Polymer Composite: The Equine Hoof Wall", *Acta Biomaterialia*, vol. 90, May 2019, pp. 267-277; doi.org/10.1016/j.actbio.2019.04.003.
763. L. S. Luo, B. B. Wang, F. Y. Dong, Y. Q. Su, E. Y. Guo, M. Y. Wang, L. Wang, J. X. Yu, R. O. Ritchie, J. J. Guo and H. Z. Fu, "Structural Origins for the Generation of Strength, Ductility and Toughness in Bulk-Metallic Glasses using Hydrogen Microalloying", *Acta Materialia*, vol. 171, June 1, 2019, pp. 216-230; doi.org/10.1016/j.actamat.2019.04.022.
764. T. C. Pekin, J. Ding, C. Gammer, V. B. Ozdol, C. Ophus, M. Asta, R. O. Ritchie and A. M. Minor, "Direct Measurement of Nanostructural Change During *In Situ* Deformation of a Bulk Metallic Glass", *Nature Communications*, vol. 10, June 4, 2019, p. 2445; doi.org/10.1038/s41467-019-10416-5.

765. F. N. Schmidt, E. A. Zimmermann, F. Walsh, C. Plumeyer, E. Schaible, I. A. K. Fiedler, P. Milovanovic, M. Rößle, M. Amling, C. Blanchet, B. Gludovatz, R. O. Ritchie and B. Busse, “On the Origins of Fracture Toughness in Advanced Teleosts: How the Swordfish Sword’s Bone Structure and Composition Allow for Slashing under Water to Kill or Stun Prey”, *Advanced Science*, vol. 6 (12), June 19, 2019, art.# 1970072; doi.org/10.1002/advs.201970072.
766. Y. Liu, J. Wang, S. J. Kim, H. Sun, F. Yang, Z. Fang, N. Tamura, R. Zhang, X. Song, J. Wen, B. Xu, M. Wang, S. Lin, Q. Yu, K. Tom, Y. Deng, S. Yan, J. Turner, E. Chan, D. Jin, R. O. Ritchie, A. Minor, D. Chrzan, M. Scott and J. Yao, “Helical Van Der Waals Crystals with Discretized Eshelby Twist”, *Nature*, vol. 570 (7761), June 20, 2019, pp. 358-362; doi.org/10.1038/s41586-019-1308-y.
767. K. V. S. Thurston, B. Gludovatz, Q. Yu, G. Laplanche, E. P. George and R. O. Ritchie, “Temperature and Load-Ratio Dependent Fatigue-Crack Growth in the CrMnFeCoNi High-Entropy Alloy”, *Journal of Alloys and Compounds*, vol. 794, July 25, 2019, pp. 523-533; doi.org/10.1016/j.jallcom.2019.04.234.
768. K. V. S. Thurston, A. Hohenwarter, G. Laplanche, E. P. George, B. Gludovatz and R. O. Ritchie, “On the Onset of Deformation Twinning in the CrFeMnCoNi High-Entropy Alloy using a Novel Tensile Specimen Geometry”, *Intermetallics*, vol. 110, July 2019, art.# 106469; doi.org/10.1016/j.intermet.2019.04012.
769. E. P. George, D. Raabe and R. O. Ritchie, “High-Entropy Alloys”, *Nature Reviews Materials*, vol. 4 (8), Aug. 2019, pp. 515–534; doi.org/10.1038/s41578-019-0121-4.
770. A. Wat, C. Ferraro, Xu Deng, A. J. Sweet, A. P. Tomsia, E. Saiz and R. O. Ritchie, “Bioinspired Nacre-like Alumina with a Metallic Nickel Compliant-Phase Fabricated by Spark-Plasma Sintering”, *Small*, vol. 15 (31), Aug. 2, 2019, art.# 190573; doi.org/10.1002/sml.201900573.
771. E. A. Zimmermann, C. Riedel, K. Stockhausen, Y. Chushkin, E. Schaible, F. Schmidt, B. Gludovatz, E. Vettorazzi, F. Zontone, K. Püschel, M. Amling, R. O. Ritchie and B. Busse, “Mechanical Competence and Bone Quality Develop during Skeletal Growth”, *Journal of Bone and Mineral Research*, vol. 34 (8), Aug., 2019, pp. 1461-1472; doi.org/10.1002/jbmr.3730.
772. K. Yang, J. Guan, K. Numata, C. Wu, S. Wu, Z. Shao and R. O. Ritchie, “Integration of Tough Wild *Antheraea Pernyi* Silk and Strong Carbon Fibres for Impact-Critical Structural Composites”, *Nature Communications*, vol. 10, Aug. 22, 2019, p. 3786; doi.org/10.1038/s41467-019-11520-2.
773. W. Huang, D. Restrepo, P. Zavattier, J.-Y. Jung, F. Y. Su, Z. Liu, R. O. Ritchie, J. McKittrick and D. Kisailus, “Multiscale Toughening Mechanisms in Biological Materials and Bioinspired Designs”, *Advanced Materials*, vol. 31 (43), 2019, p. 1901561; doi.org/10.1002/adma.201901561.
774. S. Yin, W. Yang, J. Kwon, A. Wat, M. A. Meyers and R. O. Ritchie, “Hyperelastic Phase-Field Fracture Mechanics Modeling of the Toughening Induced by Bouligand Structures in Natural Materials”, *Journal of the Mechanics and Physics of Solids*, vol. 131, Oct. 2019, pp. 204-220; doi.org/10.1016/j.jmps.2019.07.001.
775. Q. Ding, Y. Zhang, X. Chen, X. Fu, D. Chen, S. Chen, L. Gu, F. Wei, H. Bei, Y. Gao, M. Wen, J. Li, Z. Zhang, T. Zhu, R. O. Ritchie and Q. Yu, “Tuning Element Distribution, Structure and Properties by Composition in High-Entropy Alloys”, *Nature*, vol. 574 (7777), Oct. 10, 2019, pp. 223-227; doi.org/10.1038/s41586-019-1617-1.
776. J.-I. Lee, A. Wat, J. Y. Kim, C. W. Ryu, H. J. Chang, E. S. Park and R. O. Ritchie, “Synthesis of Bioinspired Ice-Templated Bulk Metallic Glass-Alumina Composites with Intertwined Dendritic Structure”, *Scripta Materialia*, vol. 172, Nov. 2019, pp. 159-164; doi.org/10.1016/j.scriptamat.2019.07.023.

777. C. W. Shao, S. Zhao, X. G. Wang, Y. K. Zhu, Z. Zhang and R. O. Ritchie, “Architecture of High-Strength Aluminum-Matrix Composites Processed by a Novel Microcasting Technique”, *npg Asia Materials*, vol. 11 (1), Nov. 29, 2019, p. 69; doi.org/10.1038/s41427-019-0174-2.
778. G. Tan, J. Zhang, L. Zheng, D. Jiao, Z. Liu, Z. Zhang and R. O. Ritchie, “Nature-Inspired Nacre-Like Composites Combining Human Tooth-Matching Elasticity and Hardness with Exceptional Damage-Tolerance”, *Advanced Materials*, vol. 31, Nov. 12, 2019 art.# 201904643; doi.org/10.1002/adma.201904603.
779. W. Yang, H. Quan, M. A. Meyers and R. O. Ritchie, “Arapaima Fish Scale: One of the Toughest Flexible Biological Materials”, *Matter*, vol. 1, Dec. 4, 2019 pp. 1557-1566; doi.org/10.1016/j.matt.2019.09.014.
780. W. Yang, Y. Yu, R. O. Ritchie and M. A. Meyers, “On the Strength of Hair Across Species”, *Matter*, vol. 2, Jan. 8, 2020, pp. 136-149; doi.org/10.1016/j.matt.2019.09.019.
781. E. A. Zimmermann and R. O. Ritchie, “Human Cortical Bone as a Structural Material: Hierarchical Design and Biological Degradation”, in *Bioinspired Structures and Design*, W. O. Soboyejo and L. Daniel, eds., Cambridge University Press, Cambridge, U.K., 2020, pp. 20-44; doi.org/10.1017/9781139058995.003.
782. C. Yang, Q. Zhao, Z. Zhang, L. Li, W. Tian, R. Liu, P. Zhang, Y. Xu, Y. Li, Z. Zhang, Q. Jiang and R. O. Ritchie, “Nanoparticle Additions Promote Outstanding Fracture Toughness and Fatigue Strength in a Cast Al-Cu Alloy”, *Materials and Design*, vol. 186, Jan. 15, 2020, art.# 108211; doi.org/10.1016/j.matdes.2019.108221
783. Z. Liu, Z. Zhang and R. O. Ritchie, “Structural Orientation and Anisotropy in Biological Materials: Functional Designs and Mechanics”, *Advanced Functional Materials*, vol. 30 (10), Jan. 3, 2020, art.# 1908121; doi.org/10.1002/adfm.201908121.
784. D. Sorensen, E. Hintsala, J. Stevick, J. Pischlar, B. Li, D. Kiener, J. C. Myers, H. Jin, J. Liu, D. Stauffer, A. J. Ramirez and R. O. Ritchie, “Intrinsic Toughness of the Bulk-Metallic Glass Vitreloy 105 Measured Using Micro-Cantilever Beams”, *Acta Materialia*, vol. 183, Jan. 15, 2020, pp. 242-248; doi.org/10.1016/j.actamat.2019.11.021.
785. Z. Liu, Z. Zhang and R. O. Ritchie, “Interfacial Toughening Effect of Suture Structures”, *Acta Biomaterialia*, vol. 102, Jan. 15, 2020, pp. 75-82; doi.org/10.1016/j.actbio.2019.11.034.
786. R. Cao, Q. Yu, J. Pan, Y. Lin, A. Sweet, Y. Li and R. O. Ritchie, “On the Exceptional Damage-Tolerance of Gradient Metallic Materials”, *Materials Today*, vol. 32, Jan.-Feb. 2020, pp. 94-107; doi.org/10.1016/j.mattod.2019.09.023.
787. D. Liu, S. Knol, J. Ell, H. Barnard, M. Davies, J. A. Vreeling and R. O. Ritchie, “X-Ray Tomography of the Crushing Strength and Irradiation Behaviour of Dedicated Tristructural Isotropic Nuclear Fuel Particles at 1000°C”, *Materials and Design*, vol. 187, Feb. 2020, p. art.# 108382; doi.org/10.1016/j.matdes.2019.108382.
788. S. Chen, H. S. Oh, B. Gludovatz, S. J. Kim, E. S. Park, Z. Zhang, R. O. Ritchie and Q. Yu, “Real Time Nanoscale Observations of Ultrahigh Strain Hardening Originating from the TRIP effect in a Dual-Phase CrMnFeCoNi High-Entropy Alloy”, *Nature Communications*, vol. 11 (1), Feb. 11, 2020, p. 826; doi.org/10.1038/s41467-020-14641-1.
789. J. Kwon, K. Evans, L. Ma, D. Arnold, M. E. Yildizdag, T. I. Zohdi, R. O. Ritchie and T. Xu, “Scalable Electrically Conductive Spray Coating Based on Block Copolymer Nanocomposites”, *ACS Applied Nano Materials*, vol. 12 (7), Feb. 19, 2020, pp. 8687-8694; doi.org/10.1021/acsami.9b20817.
790. S. Moniri, H. Bale, T. Volkenandt, Y. Wang, J. Gao, T. Lu, K. Sun, R. O. Ritchie and A. J. Shahani, “Multi Step Crystallization of Self-Organized Spiral Eutectics”, *Small*, vol. 16 (8), Feb. 19, 2020, art.# 1906146; doi.org/10.1002/sml.201906146.

791. Y. Zhang, G. Tan, D. Jiao, J. Zhang, S. Wang, F. Liu, Z. Liu, L. Zhuo, Z. Zhang, S. Deville and R. O. Ritchie, "Ice-Templated Porous Tungsten and Tungsten Carbide Inspired by Natural Wood", *Journal of Materials Science and Technology*, vol. 45, May 15, 2020, pp. 187-197; doi.org/10.1016/j.jmst.2019.10.021.
792. X. Fu, G. Wang, Y. Wu, W. L. Song, C. H. Shek, Y. Zhang, J. Sheng and R. O. Ritchie "Compressive Ductility and Fracture Resistance in CuZr-Based Shape-Memory Metallic-Glass Composites", *International Journal of Plasticity*, vol. 128, May 2020, art.# 102687; doi.org/10.1016/j.ijplas.2020.102687.
793. M. Y. Zhang, Q. Yu, Z. F. Liu, G. Tan, D. Jiao, W. Zhu, S. Li, Z. F. Zhang, R. Yang and R. O. Ritchie, "3-D Printed Mg-NiTi Interpenetrating-Phase Composites with High Strength, Damping Capacity and Energy Absorption Efficiency", *Science Advances*, vol. 6 (19), May 8, 2020, art.# eaba5581; doi.org/10.1126/sciadv.aba5581.
794. R. Zhang, S. Zhao, J. Ding, Y. Chong, T. Jia, C. Ophus, M. Asta, R. O. Ritchie and A. M. Minor, "Verification of Short-Range Order and Its Impact on the CrCoNi Medium Entropy Alloy", *Nature*, vol. 581 (7808), May 22, 2020, pp. 283-287; doi.org/10.1038/s41586-020-2275-z.
795. Z. Mao, X. Bi, F. Ye, X. Shu, L. Sun, J. Guan, R. O. Ritchie and S. Wu, "Controlled Cryogelation and Catalytic Cross-linking Yields Highly Elastic and Robust Silk Fibroin Scaffolds", *ACS Biomaterials Science & Engineering*, vol. 6 (8), Aug. 2020, pp. 4512-4522; doi.org/10.1021/acsbiomaterials.0c00752.
796. L. Liu, Q. Yu, Z. Wang, J. Ell, M. X. Huang and R. O. Ritchie, "Making Ultrastrong Steel Tough by Grain-Boundary Delamination", *Science*, vol. 368 (6497) June 19, 2020, pp. 1347-1352; doi.org/10.1126/science.aba9413.
797. Y. Lin, Q. Yu, J. Pan, F. Duan, R. O. Ritchie and Yi Li, "On the Impact Toughness of Gradient-Structured Metals", *Acta Materialia*, vol. 193, July 2020, pp. 125-137; doi.org/10.1016/j.actamat.2020.04.027.
798. T. Rolvien, P. Milovanovic, F. N Schmidt, S. von Kroge, E M. Wölfel, M. Krause, B. Wulff, K. Püschel, R. O. Ritchie, M. Amling and B. Busse, "Long-Term Immobilization in Elderly Females Causes a Specific Pattern of Cortical Bone and Osteocyte Deterioration Different from Postmenopausal Osteoporosis", *Journal of Bone and Mineral Research*, vol. 35 (7), July 2020, pp. 1343-1351; doi.org/10.1002/jbmr.3970.
799. S. Yin, H. Chen, R. Yang, Q. He, D. Chen, L. Ye, Y-W. Mai, J. Xu and R. O. Ritchie, "Tough Nature-Inspired Helicoidal Composites with Printing Induced Voids", *Cell Reports Physical Science*, vol. 1 (7), July 22, 2020, art.# 100109; doi.org/10.1016/j.xcrp.2020.100109.
800. S. Yin, J. Ding, M. Asta and R. O. Ritchie, "Ab Initio Modeling of the Energy Landscape for Screw Dislocations in Body-Centered Cubic High-Entropy Alloys", *npj Computational Materials*, vol. 6, July 29, 2020, p. 110; doi.org/10.1038/s41524-020-00377-5.
801. H. Quan, W. Yang, M. Lapeyriere, E. Schaible, R. O. Ritchie and M. A. Meyers, "Structure and Mechanical Adaptability of a Modern Elasmoid Fish Scale from the Common Carp", *Matter*, vol. 3 (3), Sept. 2, 2020, pp. 842-863; doi.org/10.1016/j.matt.2020.05.011.
802. H. Quan, W. Yang, Z. Tang, R. O. Ritchie and M. A. Meyers, "Active Defense Mechanisms of Thorny Catfish", *Materials Today*, vol. 28, Sept. 2020, pp. 35-48; doi.org/10.1016/j.mattod.2020.04.028.
803. H. Cao, M. H. Wu, F. Zhou, R. M. McMeeking and R. O. Ritchie, "The Influence of Mean Strain on the High-Cycle Fatigue of Nitinol with Application to Medical Devices", *Journal of the Mechanics and Physics of Solids*, vol. 143, October 2020, art.# 104057; doi.org/10.1016/j.jmps.2020.104057.

804. K. Yang, J. Guan, Z. Z. Shao and R. O. Ritchie “Mechanical Properties and Toughening Mechanisms of Natural Silkworm Silks and their Composites”, *Journal of the Mechanical Behavior of Biomedical Materials*, vol. 110, Oct. 2020, art.# 103942; doi.org/10.1016/j.jmbbm.2020.103942.
805. H.-C. Loh, T. Divoux, B. Gludovatz, P. U. P. A. Gilbert, R. O. Ritchie, F.-J. Ulm and A. Masic, “Nacre Toughening due to Cooperative Plastic Deformation of Stacks of Co-Oriented Aragonite Platelets”, *Communications Materials*, vol. 1, Oct. 28, 2020, p. 77; doi.org/10.1038/s43246-020-00078-y.
806. J. Rackwitz, Q. Yu, Y. Yang, G. Laplanche, E. P. George, A. M. Minor and R. O. Ritchie, “Effects of Cryogenic Temperature and Grain Size on Fatigue-Crack Propagation in the Medium-Entropy CrCoNi Alloy”, *Acta Materialia*, vol. 200, Nov. 2020, pp. 351-365; doi.org/10.1016/j.actamat.2020.09.021.
807. S. N. Garner, S. E. Naleway, M. S. Hosseini, C. Acevedo, B. Gludovatz, E. Schaible, J.-Y. Jung, R. O. Ritchie, P. Zavattieri and J. McKittrick, “The Role of Collagen in the Dermal Armor of the Boxfish”, *Journal of Materials Research & Technology*, vol. 9 (6), Nov.-Dec. 2020, pp. 13825-13841; doi.org/10.1016/j.jmrt.2020.09.090.
808. S. Dike, W. Yang, A. Pissarenko, H. Quan, F. C. Garcia Filho, R. O. Ritchie and M. A. Meyers, “On the Gular Sac Tissue of the Brown Pelican: Structural Characterization and Mechanical Properties”, *Acta Biomaterialia*, vol. 118, Dec., 2020, pp. 161-181; doi.org/10.1016/j.actbio.2020.10.008.
809. M. A. Meyers and R. O. Ritchie, “Offering Toughness and Protection, Arapaima Scales Provide Effective Defense Against Predation”, *Matter*, vol. 3 (6), Dec. 2, 2020, pp. 1979-1980; doi.org/10.1016/j.matt.2020.10.029.
810. Y. Zhu, K. Ameyama, P. Anderson, I. Beyerlein, H. Gao, H. S. Kim, E. Lavernia, S. Mathaudhu, H. Mughrabi, R. O. Ritchie, N. Tsuji, X. Zhang and X. Wu, “Heterostructured Materials: Superior Properties from Hetero-Zone Interaction”, *Materials Research Letters*, vol. 9 (1), 2021, pp. 1-31; doi.org/10.1080/21663831.2020.1796836.
811. K. E. Stockhausen, M. Qwamizadeh, E. M. Wölfel, H. Hemmatian, I. A. K. Fiedler, S. Flenner, E. Longo, M. Amling, I. Greving R. O. Ritchie, F. N. Schmidt and B. Busse, “Collagen Fiber Orientation is Coupled with Specific Nano-Compositional Patterns in *Dark* and *Bright* Osteons Modulating their Biomechanical Properties”, *ACS Nano*, vol. 15 (1), Jan. 6, 2021, pp. 455-467; doi.org/10.1021/acsnano.0c04786.
812. L. Luo, L. S. Luo, R. O. Ritchie, Y. Q. Su, B. B. Wang, L. Wang, R. Chen, J. J. Guo and H. Z. Fu, “Optimizing the Microstructures and Mechanical Properties of Al-Cu-based Alloys with Large Solidification Intervals by Coupling Travelling Magnetic Fields with Sequential Solidification”, *Journal of Materials Science & Technology*, vol. 61, Jan. 20, 2021, pp. 100-113; doi.org/10.1016/j.jmst.2020.05.048.
813. M. Benedetti, A. du Plessis, R. O. Ritchie, M. Dallago, S. M. J. Razavi and F. Berto, “Architected Cellular Materials: A Review on their Mechanical Properties towards Fatigue-Tolerant Design and Fabrication”, *Materials Science and Engineering R*, vol. 144, Jan. 2021, art.# 100606; doi.org/10.1016/j.msar.2021.100606.
814. S. Zhao, Z. Li, C. Zhu, W. Yang, Z. Zhang, D. E. J. Armstrong, P. S. Grant, R. O. Ritchie and M. A. Meyers, “Amorphization in Extreme Deformation of the CrMnFeCoNi High-Entropy Alloy”, *Science Advances*, vol. 7 (5), Jan. 29, 2021, art.# eabb3108; doi.org/10.1126/sciadv.abb3108.

815. B. Su, L. Luo, B. Wang, Y. Su, L. Wang, R. O. Ritchie, E. Guo, T. Li, H. Yang, H. Huang, J. Guo and H. Fu, “Annealed Microstructure Dependent Corrosion Behavior of Ti-6Al-3Nb-2Zr-1Mo Alloy”, *Journal of Materials Science & Technology*, vol. 62, Jan. 30, 2021, pp. 234-238; doi.org/10.1016/j.jmst.2020.05.058.
816. Z. S. Hosseini, M. Dadfarnia, A. Nagao, M. Kubota, B. P. Somerday, R. O. Ritchie and P. Sofronis, “Modeling the Hydrogen Effect on the Constitutive Response of a Low Carbon Steel in Cyclic Loading”, *Journal of Applied Mechanics, Trans. ASME*, vol 88 (3), March 2021, p. art.# 031001; doi.org/10.1115/1.4049076.
817. J. Ding, L. Li, N. Wang, L. Tian, M. Asta, R. O. Ritchie and T. Egami, “Universal Nature of the Saddle States of Structural Excitations in Metallic Glasses”, *Materials Today Physics*, vol.17, March 2021, art.# 100359; doi.org/10.1016/j.mtphys.2021.100359.
818. F. Walsh, M. Asta and R. O. Ritchie, “Magnetically Driven Short-Range Order as an Explanation for Anomalous Measurements in CrCoNi”, *Proceedings of the National Academy of Sciences (PNAS)*, vol. 118 (13), March 30, 2021, art.# e2020540118; doi.org/10.1073/pnas.2020540118.
819. S. Yin, W. Guo, H. Wang, Y. Huang, R. Yang, Z. Hu, D. Chen, J. Xu and R. O. Ritchie, “Strong and Tough Bioinspired Additive-Manufactured Dual-Phase Mechanical Metamaterial Composites”, *Journal of the Mechanics and Physics of Solids*, vol. 149, April 2021, p. 104341; doi.org/10.1016/j.jmps.2021.104341.
820. C. DelRe, Y. Jiang, P. Kang, J. Kwon, A. Hall, I. Jayapurna, Z. Ruan, L. Ma, K. Zolkin, T. Li, C. D. Scown, R. O. Ritchie, T. P. Russell and T. Xu, “Near Complete Depolymerization of Polyesters with Nano-Dispersed Enzymes”, *Nature*, vol. 592 (7855), April 22, 2021, pp. 558-563; doi.org/10.1038/s41586-021-03408-3.
821. M. Zhang, Q. Yu, Z. Liu, J. Zhang, D. Jiao, S. Li, H. Peng, Q. Wang, Z. Zhang and R. O. Ritchie, “Compressive Properties of 3-D Printed Mg-NiTi Interpenetrating-Phase Composite: Effects of Strain Rate and Temperature”, *Composites B*, vol. 215, June 15, 2021, art.# 108783; doi.org/10.1016/j.compositesb.2021.108783.
822. R. O. Ritchie, “Toughening Materials: Enhancing Resistance to Fracture”, *Philosophical Transactions of the Royal Society A*, vol. 379, June 21, 2021, art.# 20200437; doi.org/10.1098/rsta.2020.0437.
823. H. Quan, A. Piroso, W. Yang, R. O. Ritchie and M. A. Meyers, “Hydration-Induced Reversible Deformation of the Pine Cone”, *Acta Biomaterialia*, vol. 128, July 1, 2021, pp. 370-383; doi.org/10.1016/j.actbio.2021.04.049.
824. T. J. Pirezada, D. Liu, J. Ell, H. Barnard, I. Šulák, M. Galano, T. J. Marrow and R. O. Ritchie, “*In Situ* Observation of the Deformation and Fracture of an Alumina-Alumina Ceramic-Matrix Composite at Elevated Temperature using X-Ray Computed Tomography”, *Journal of the European Ceramic Society*, vol. 41 (7), July 2021, pp. 4217-4230; doi.org/10.1016/j.jeurceramsoc.2021.01.030.
825. W. Tian, K. Yang, S. Wu, J. Yang, H. Luo, R. O. Ritchie and J. Guan, “Impact of Hydration on the Mechanical Properties and Damage Mechanisms of Natural Silk Fibre Reinforced Composites”, *Composites A*, vol. 147, August, 2021, art.# 106458; doi.org/10.1016/j.compositesa.2021.106458.
826. S. Yin, Y. Zuo, A. Abu-Odeh, H. Zheng, X.-G. Li, J. Ding, S. P. Ong, M. Asta and R. O. Ritchie, “Atomistic Simulations of Dislocation Mobility in Refractory High-Entropy Alloys and the Effect of Chemical Short-Range Order”, *Nature Communications*, vol. 12, Aug. 11, 2021, art.#; 4873; doi.org/10.1038/s41467-021-25134-0.

827. S. Zhao, R. Zhang, Q. Yu, J. Ell, R. O. Ritchie and A. M. Minor, “Cryoforged Nanotwinned Titanium with Ultrahigh Strength and Ductility”, *Science*, vol. 373 (6561), Sept. 17, 2021, pp. 1363-1368; doi.org/10.1126/science.abe7252.
828. R. Qu, R. Maaß, Z. Liu, D. Tönnies, L. Tian, R. O. Ritchie, Z. Zhang and C. A. Volkert, “Flaw-Insensitive Fracture of a Micrometer-Sized Brittle Metallic Glass”, *Acta Materialia*, vol. 218, Oct. 1, 2021, art.# 117219; doi.org/10.1016/j.actamat.2021.117219.
829. J. P. Forna-Kreutzera, J. Ell, H. Barnard, T. Pirzada, R. O. Ritchie and D. Liu, “Full-Field Characterisation of Oxide-Oxide Ceramic-Matrix Composites using X-ray Computed Micro-Tomography and Digital Volume Correlation under Load at High Temperatures”, *Materials and Design*, vol. 208, Oct. 2021, art.# 109899; doi.org/10.1016/j.matdes.2021.109899.
830. W. Guo, Y. Huang, R. O. Ritchie and S. Yin, “Dissipative Dual-Phase Mechanical Metamaterial Composites via Architectural Design”, *Extreme Mechanics Letters*, vol. 48, Oct. 2021, art.# 101442; doi.org/10.1016/j.eml.2021.101442.
831. G. Tan, Q. Yu, Z. Liu, X. Wang, M. Zhang, Y. Liu, Z. Zhang and R. O. Ritchie, “Compression Fatigue Properties and Damage Mechanisms of a Bioinspired Nacre-Like Ceramic-Polymer Composite”, *Scripta Materialia*, vol. 203, Oct. 2021, art.# 114089; doi.org/10.1016/j.scriptamat.2021.114089.
832. R. Cao, Q. Yu, Y. Li and R. O. Ritchie, “Dual-Gradient Structure Leads to Optimized Combination of High Fracture Resistance and Strength-Ductility Synergy with Minimized Final Catastrophic Failure”, *Journal of Materials Research & Technology*, vol. 15, Nov.-Dec. 2021, pp. 901-910; doi.org/10.1016/j.jmrt.2021.08.102.
833. Y. Zhang, G. Tan, M. Zhang, Q. Yu, Z. Liu, Y. Liu, J. Zhang, D. Jiao, F. Wang, L. Zhuo, Z. Zhang and R. O. Ritchie, “Bioinspired Tungsten-Copper Composites with Bouligand-Type Architectures Mimicking Fish Scales”, *Journal of Materials Science and Technology*, vol. 96, Jan. 10, 2022, pp. 21-30; doi.org/10.1016/j.jmst.2021.04.022.
834. B. Gludovatz and R. O. Ritchie, “Fracture Properties of High-Entropy Alloys”, *MRS Bulletin*, vol. 47 (2), Feb. 2022, submitted.
835. F. Dong, Y. Chu, M. He, Y. Zhang, W. Li, P. K. Liaw, B. Wang, L. Luo, Y. Su, R. O. Ritchie and X. Yuan, “Manipulating Internal Flow Units Toward Favorable Plasticity in Zr-Based Bulk-Metallic Glasses by Hydrogenation”, *Journal of Materials Science & Technology*, vol. 102, March 10, 2022, pp. 36-45; doi.org/10.1016/j.jmst.2021.04.037.
836. Y. Liu, Q. Yu, G. Tan, M. Zhang, E. Tang, S. Wang, Z. Liu, Q. Wang, Z. Zhang and R. O. Ritchie, “Bioinspired Fish-Scale-Like Magnesium Composites Strengthened by Contextures of Continuous Titanium Fibers: Lessons from Nature”, *Journal of Magnesium and Alloys*, published online, July 26, 2021; doi.org/10.1016/j.jma.2021.06.023.

9/24/2021