AMIT SHYAM

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EDUCATION

Michigan Technological University 1997 – 2002

- PhD in Materials Science and Engineering
- GPA: 4.0 / 4.0

Indian Institute of Technology (IIT), Kanpur 1993 – 1997

- B.Tech in Materials and Metallurgical Engineering

RESEARCH INTERESTS

- Fracture and fatigue of engineering alloys, ceramics and composites
- Mechanical reliability and durability assessment of functional materials
- Materials for energy efficiency and renewable energy applications
- Green technologies
- New application of fracture mechanics techniques

EMPLOYMENT EXPERIENCE

Oak Ridge National Lab Oak Ridge, TN (Nov 2004 to present)
Post Doctoral Research Associate – Materials Science and Technology Division
Research Staff Member – High Temperature Materials Laboratory User Program

University of Michigan and Ford Research Laboratories Ann Arbor, MI (Oct 2002 to Oct 2004)
Post Doctoral Research Fellow

Michigan Technological University Houghton, MI (August 1997 to Sept 2002)
Graduate Research Assistant

Indian Institute of Technology Kanpur, India (August 1996 to May 1997)
Undergraduate Research Assistant

The Tata Iron and Steel Company (TISCO) Jamshedpur, India (June 1996 to July 1996)
Industrial Trainee

HONORS AND ACTIVITIES

- Reviewer – Metallurgical and Materials Transactions A; Scripta Materialia; International Journal of Fatigue
- Best Student Paper Award, Magnesium Technology 2004, Light Metals Division – TMS
- Finishing Fellowship, Michigan Technological University, Summer 2002
- Challenge Fellowship, Michigan Technological University, 1998 to Feb 2000
- Forging Achievement Award, FIERF, 1999
- Member, Honor Society of Phi Kappa Phi, 1999
- Award for Academic Excellence, Academic Senate, IIT Kanpur, 1996
- Member, The Minerals, Metals and Materials Society (TMS)
- Member, The American Ceramic Society (ACerS)

ARCHIVAL JOURNAL PUBLICATIONS

- X. Zhu , **A. Shyam**, J.W. Jones, H. Mayer, J.V. Lasecki and J.E. Allison, "Effects of microstructure and temperature on fatigue behavior of E319-T7 cast aluminum alloy in very long life cycles" *International Journal of Fatigue*, vol. 28, no. 11, pp. 1566-1571, November 2006.
- **A. Shyam** and E. Lara-Curzio, "The double-torsion testing technique for determination of fracture toughness and slow crack growth behavior of materials: a review" *Journal of Materials Science*, vol. 41, no. 13, pp. 4093-4104, July 2006.
- **A. Shyam**, J. E. Allison and J. W. Jones, "A small fatigue crack growth relationship and its application to cast aluminum", *Acta Materialia*, vol. 53, no. 5, pp. 1499-1509, March 2005.
- **A. Shyam** and W. W. Milligan, "A model for slip irreversibility, and its effect on the fatigue crack propagation threshold in a nickel-base superalloy", *Acta Materialia*, vol. 53, no. 3, pp. 835-844, February 2005.
- **A. Shyam**, Y. N. Picard, J. W. Jones, J. E. Allison and S.M. Yalisove, "Small fatigue crack propagation from micronotches in the cast aluminum alloy W319", *Scripta Materialia*, vol. 50, no. 8, pp. 1109-1114, April 2004.
- **A. Shyam** and W. W. Milligan, "Effects of deformation behavior on fatigue fracture surface morphology in a nickel-base superalloy", *Acta Materialia*, vol. 52, no. 6, pp. 1503-1513, April 2004.
- **A. Shyam**, S. A. Padula II, S. I. Marras and W. W. Milligan, "Fatigue crack propagation thresholds in nickel-base superalloys at high frequencies and temperatures", *Metallurgical and Materials Transactions A*, vol. 33A, no. 7, pp. 1949-1962, July 2002.
- J. K. Lee, M. Hiratani, K. Kalaitzidou and **A. Shyam**, "Coherency strain induced ordering in substitutional alloys", *Metals and Materials*, vol. 5, no. 6, pp. 519-523, December 1999.
- 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, no. 7, pp. 725-731, August 1999.
- A. K. Jena, **A. Shyam** and M. C. Chaturvedi: "Growth of recrystallising grains in boron doped $Ni_{76}Al_{24}$", *Materials Science and Technology*, vol. 15, no. 1, pp. 53-56, January 1999.
- **A. Shyam**, S. Suwas and S. Bhargava: "Microstructural features of iron aluminides formed by the reaction between solid iron and liquid aluminum", *Praktische Metallographie*, vol. 34, no. 6, pp. 264-277, June 1997.

CONFERENCE PROCEEDINGS

- **A. Shyam**, E. Lara-Curzio, H.-T. Lin and R. J. Parten, "Fracture toughness of porous cordierite" to be published in the proceedings of the Cocoa Beach Meeting of the American Ceramic Society, 2006.
- **A. Shyam**, J. W. Jones and J. E. Allison, "On small fatigue crack growth in structural materials" to be published in the Proceedings of the International Conference on Fatigue, 2006.
- **A. Shyam**, C. J. Torbet, C. J. Szczepanski, S. K. Jha, M. J. Caton, J. M. Larsen, T. M. Pollock and J. W. Jones, "Ultrasonic fatigue of a nickel-base turbine disk alloy at room and elevated temperatures" in *Materials Damage Prognosis*, J.M. Larsen, L. Christodoulou, J.R. Calcaterra, M.L. Dent, M.M. Deriso, W.J. Hardman, J.W. Jones and S.M. Russ, eds., TMS, Warrendale, PA, pp. 247-252, 2005.
- C. J. Szczepanski, **A. Shyam**, S. K. Jha, J. M. Larsen, C. J. Torbet, S. J. Johnson and J. W. Jones, "Characterization of the role of microstructure on the fatigue life of Ti-6Al-2Sn-4Zr-6Mo using ultrasonic fatigue" in *Materials Damage Prognosis*, J.M. Larsen, L. Christodoulou, J.R. Calcaterra, M.L. Dent, M.M. Deriso, W.J. Hardman, J.W. Jones and S.M. Russ, Eds., TMS, Warrendale, PA, pp. 315-320, 2005.
- **A. Shyam**, J.E. Allison and J.W. Jones, "Modeling small fatigue crack growth in cast aluminum alloys", Proceedings of the *11th International Conference on Fracture (ICF 11)*, Alberto Carpinteri *et al*., eds., CD-ROM Edition, Turin, Italy, March 20-25, 2005.
- X. Zhu, **A. Shyam**, J. W. Jones, H. Mayer, J. V. Lasecki and J. E. Allison, "Elevated temperature fatigue behavior of a 319 cast aluminum alloy in the gigacycle regime" *3rd International Conference on Very High Cycle Fatigue (VHCF-3)*, T. Sakai and Y. Ochi, eds., Kusatsu, Japan, pp. 553-560, 2004.
- **A. Shyam**, C. J. Torbet, S. K. Jha, J. M. Larsen, M. J. Caton, C. J. Szczepanski, T. M. Pollock and J. W. Jones, "Development of ultrasonic fatigue for rapid, high temperature fatigue studies in turbine engine materials" in *Superalloys 2004*, K.A. Green *et al*., eds., TMS, Warrendale, PA, pp. 259-268, 2004.
- A. R. Moore, C. J. Torbet, **A. Shyam**, J. W. Jones, D. M. Walukas and R. F. Decker, "Fatigue behavior of thixomolded® magnesium AZ91D using ultrasonic techniques", in *Magnesium Technology 2004*, A. A. Luo, ed., TMS, Warrendale, PA, pp. 263-268, 2004.
- **A. Shyam** and W. W. Milligan, "Role of slip homogeneity in determining fatigue thresholds in a nickel-base turbine disk alloy", in Proceedings of the *Seventh National Turbine Engine High Cycle Fatigue (HCF) Conference*, Universal Technology Corp., Dayton, OH, 2002, CD-Rom, session 5.

- S. A. Padula II, **A. Shyam**, D. L. Davidson and W. W. Milligan, "In-situ study of high frequency fatigue crack propagation in a single crystal superalloy", in *Fatigue – David L. Davidson Symposium*, K. S. Chan, P. K. Liaw, R. S. Bellows, T. C. Zogas and W. O. Soboyejo, eds., TMS, Warrendale, PA, pp. 183-189, 2002.
- **A. Shyam**, S. A. Padula II, S. I. Marras and W. W. Milligan, "High frequency, High temperature fatigue crack propagation thresholds in a nickel-base turbine disk alloy", in Proceedings of the *Sixth National Turbine Engine High Cycle Fatigue (HCF) Conference*, Universal Technology Corp., Dayton, OH, 2001, CD-Rom.
- **A. Shyam**, S. A. Padula II, and W. W. Milligan, "High frequency fatigue crack propagation in the Nickel-base superalloy KM4 at high temperatures", in *Fatigue and Fracture Behavior of High Temperature Materials* (USA), Minerals, Metals and Materials Society/AIME, pp. 9-15, 2000.
- S. A. Padula, II, **A. Shyam**, and W. W. Milligan, "High temperature, high cycle fatigue of nickel-base turbine disk alloy," 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. 54-61.
- M. E. Lorimer, T. L. Ristau, and **A. Shyam**, "Measurement and computer modeling of the strain distribution in an aluminum forging", in Proceedings of the *22nd Forging Industry Technical Conference*, Lake Geneva, Wisconsin.
- S. A. Padula II, **A. Shyam**, D. L. Davidson, and W. W. Milligan, "High frequency fatigue of nickel-base superalloys", in Proceedings of the *Fourth National Conference on High Cycle Fatigue*, Universal Technology Corp., Dayton, OH, 1999, pp. 22-28.
- S. A. Padula, **A. Shyam**, and W. W. Milligan, "High cycle fatigue of nickel-base superalloys," in Proceedings of the *Third National Turbine Engine High Cycle Fatigue Conference*, W. A. Stange and J. Henderson, eds., Universal Technology Corp., Dayton, OH, CD-Rom, 1998, session 5, pp. 22-28.

INVENTION DISCLOSURE FILED

- E. Lara-Curzio, **A. Shyam**, T. Yonushonis and R. Stafford, "NDE of Diesel Particulate Filters".

PRESENTATIONS

- "Fracture toughness of porous cordierite", 30th International Conference on Advanced Ceramics and Composites, Cocoa Beach, 2006 (with E. Lara-Curzio, H.-T. Lin and R. J. Parten).
- "Accelerated Development of High-Fatigue-Performance Cast Aluminum Alloys for Automotive Applications", MS&T, New Orleans 2004 (with X. Zhu, Y.N. Picard, S.M. Yalisove, J.E. Allison and J.W. Jones).
- "Ultrasonic Fatigue of a Nickel-base Superalloy at Room and Elevated Temperatures", MS&T, New Orleans 2004 (with C. J. Torbet, C. J. Szczepanski, A. Salem, T.M. Pollock, J.W. Jones, J.M. Larsen, S.K. Jha and M.J. Caton).
- " Characterization of the Role of Microstructure on the Fatigue Life of Ti-6Al-2Sn-4Zr-6Mo Using Ultrasonic Fatigue" MS&T, New Orleans 2004 (with C. J. Szczepanski, S. K. Jha, J. M. Larsen, C. J. Torbet, S. J. Johnson and J. W. Jones).
- "Ultrasonic Fatigue of Nickel-base Superalloys at Elevated Temperatures", Superalloys 2004 (Poster Presentation).
- "Ultrasonic Fatigue of Nickel-base Superalloys at Elevated Temperatures", Gordon Research Conference on Physical Metallurgy 2004 (Poster Presentation).
- "Fatigue of Structural Alloys for Engine Applications", Oak Ridge National Lab, Oak Ridge 2004.
- "The Use of Accelerated Test Methods in Assessing the Very Long Fatigue Life of Structural Materials", MS&T, Chicago 2003 (with J. W. Jones, J. M. Larsen, T. M. Pollock and J. E. Allison).
- "Determination of the Fatigue Behavior of Thixomolded® Magensium AZ91D Using Ultrasonic Techniques", MS&T, Chicago 2003 (with A. R. Moore, C. J. Torbet and J. W. Jones).
- "Fatigue Crack Initiation and Early Propagation Behavior from Micronotches in W319 Cast Aluminum Alloy", MS&T, Chicago 2003 (with J. W. Jones, J. E. Allison, Y.N. Picard, S.M. Yalisove and H-H Liu).
- "The Use of Ultrasonic Fatigue in the Modeling of Very Long Fatigue Life", TMS Annual Meeting, San Diego 2003 (with J. W. Jones and M. J. Caton).
- 7th National Turbine Engine High Cycle Fatigue Conference (Materials Session), West Palm Beach 2002.
- ASME Mechanics and Materials Conference (Fatigue of Advanced Materials Session), San Diego 2001.
- TMS Conference (Fatigue and Fracture of High Temperature Materials Session), St Louis 2000.
- TMS Conference (General Abstracts Session), Cincinnati 1999.