

## **SAMIT ROY**

ASSOCIATE PROFESSOR  
SCHOOL OF MECHANICAL AND AEROSPACE ENGINEERING  
OKLAHOMA STATE UNIVERSITY  
STILLWATER, OK 74078-5016

Dr. Roy's research interest is directed toward multi-scale modeling and failure prediction of polymer composites and structural adhesives, using the finite element method. His goal is to develop mechanism-based multi-scale durability models that would accurately predict long-term performance of materials based on data from short-term tests. He is also actively involved in the application of nanostructured reinforcements in enhancing performance of composite materials. Prior to joining OSU, Dr. Roy was an Associate Professor at University of Missouri-Rolla (UMR). Before that, he was a Senior Research Engineer at the Southwest Research Institute (SWRI) in San Antonio, TX. He was a co-PI in a multi-disciplinary project involving processing technologies for the adhesive bonding of composites and dissimilar materials. He was recently invited to contribute a book chapter entitled "Computer Models for Predicting Long-Term Durability of Polymers and Polymer Matrix Composites." Dr. Roy has authored more than 50 journal publications, book chapters, and conference papers. He was the recipient of Outstanding Teaching Award and a Faculty Excellence Award at UMR in 1999 and 2000. He is also one of the international editors of the *Polymer and Polymer Composites* Journal.

### **EDUCATION**

- 1988: Ph.D. in Engineering Science & Mechanics Virginia Polytechnic Institute & State University Blacksburg, Virginia. (Advisor: Professor J.N. Reddy)
- 1986: M.S. in Aerospace and Ocean Engineering Virginia Polytechnic Institute & State University Blacksburg, Virginia
- 1981: B.Tech (Honors) in Aeronautical Engineering Indian Institute of Technology Kharagpur, India

### **RELEVANT RESEARCH GRANTS AND CONTRACTS**

- Freeform Core Composites: Fabrication, Core Structural Optimization and Core Material Enhancement, Feb. 2002 – July 2002, funded by NASA EPSCoR.
- Micro-Macro Modeling of the External Strengthening of Concrete with Fiber Reinforced Polymer, Sept 2000 – July 2003, funded by NSF.
- Life Modeling of Polymer Composite Aircraft Engine Components, Task I : Computer Modeling, funded by Pratt & Whitney Aircraft, 1996-1999.
- Long Term Durability of Adhesively Bonded Joints, funded by Lockheed Martin, Feb. '97 – Aug. 2000.

### **AWARDS AND HONORS**

University of Missouri *Outstanding Teaching Award*, (Academic Year 1999-2000)  
University of Missouri *Outstanding Teaching Award*, (Academic Year 1998-1999)  
University of Missouri *Faculty Excellence Award*, (Calendar Year 2000)  
University of Missouri *Faculty Excellence Award*, (Calendar Year 1999)  
Academy of Mechanical Engineers *Teaching Excellence Award*, (Calendar Year 2000)

## EXPERIENCE

### Oklahoma State University (July 2001-present)

Associate Professor, School of Mechanical and Aerospace Engineering

### University of Missouri-Rolla (1994-Present)

Aug. 1994 – Jul 2000: Assistant Professor of Engineering Mechanics

Aug. 2000 – June 2001: Associate Professor of Engineering Mechanics

### Southwest Research Institute (1988-1994):

July 1990- Aug. 1994: Senior Research Engineer

Mar. 1988- June 1990: Research Engineer

### Virginia Polytechnic Institute and State University (1981-1987)

Feb. 1986 - Dec. 1 1987: Graduate Research Assistant (Dept. of ESM)

### Recent Collaborators

Dr. Ramesh Talreja, GA.Tech., Dr. K.M. Liechti, UT-Austin, Dr. Ken Reifsnider, VPI&SU ;  
Dr. Lokesh Dharani, Dr. Antonio Nanni, Dr. Walter Eversman, all at UMR, Dr. Hongbing Lu,  
Dr. Ranga Komanduri, Dr. Andrew Arena and Dr. Warren Ford, all at Oklahoma State Univ.

**Advisors:** Dr. J.N. Reddy, Texas A&M University, Dr. Eric Johnson, Virginia Tech.

**Advisees:** Anand B. Rajagopalan, Srinivas Denduluri, Tozer Bandorawalla, Durgaprasad  
Marla, Vikas Gupta, Weiqun Xu, Inguva Sreesh, Natalie Dixon, Ravi Karedla,  
Michael Benjamin, K. Vengadassalam, Yong Wang, Farzana Hussein

### Relevant Publications

1. S. Roy, H. Lu, S. Periasamy and F. Hussain, "Characterization of Fracture Behavior of Epoxy and Polypropylene Nanocomposites," Proceedings of 9<sup>th</sup> International Conference on the Mechanical Behavior of Materials (ICM-9), Geneva, Switzerland, May 25-29, 2003 (CD).
2. Lu, H., Roy, S., Sampathkumar, P., and Ma, J. (2002) "Characterization of the Fracture Behavior of Epoxy Nanocomposites", Proceedings of 17<sup>th</sup> Annual Technical Conference, American Society for Composites, West Lafayette, IN, October 21-23, 2002 (CD).
3. S. Roy, G.H. Nie, R. Karedla, L. Dharani, "Matrix Cracking and Delamination in Orthotropic Laminates Subjected to Freeze-Thaw: Model Development," *Polymer and Polymer Composites*, Vol. 10, No.5 (2002), pp. 327-340.
4. V. Gupta, S.Roy, L. Dharani, "Multi-Scale Modeling of Long-Term Material Behavior in Polymer Composite Laminates with Woven Fiber Architecture," *Polymer and Polymer Composites*, Vol. 9, No.5 (2001), pp. 297-318 .
5. S.Roy, W. Xu, S.J. Park, and K.M. Liechti "Anomalous Moisture Diffusion in Viscoelastic Polymers: Modeling and Testing", *Journal of Applied Mechanics*, Vol. 67, (2000), pp. 391-396.
6. S. Roy, R.J.Dexter, and A.F.Fossum,(1993), "A Computational Procedure for the Simulation Ductile Fracture with Large Plastic Deformation," *Engineering Fracture Mechanics*, Vol.45, No.2, pp. 277-293.