

Exponent®
Engineering & Scientific Consulting

Ning Bian, Ph.D.

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Professional Profile

Dr. Bian has an interdisciplinary background in mechanical and materials engineering and specializes in the mechanics of materials, material characterization, fracture, and fatigue behavior of various types of materials. Dr. Bian has extensive experience in the mechanical testing of materials including, but not limited to, carbon fiber, rubber, engineered plastics, composites, ultra-high-performance concrete (UHPC), and additively manufactured metals. During his doctoral research, Dr. Bian also developed a novel material composition for wind turbine blades which allowed for utilizing current industry manufacturing processes. The novel material composition reduced the weight of wind turbine blades and resulted in improved service life, effectively reducing the environmental impact. He also has experience with the design and validation of wind turbine towers utilizing finite element analysis.

Dr. Bian has extensive experience in vacuum-assisted resin infusion molding (VARIM), scanning electron microscopy (SEM) fractography, micro-computed tomography (μCT), and digital image correlation (DIC). In addition, he also has experience in determining the residual stress of additively manufactured metals by nanoindentation, extrusion of polymer fiber by twin-screw extruder, injection molding of engineering plastics, design of experiments, and data analysis. He also has experience with time-dependent materials.

Dr. Bian received his Ph.D. in Mechanical Engineering from the University of Texas at Dallas. His doctoral research focused on enhancing the mechanical properties of fiber-reinforced composites using nanofillers and the evaluation of their fracture and fatigue behavior. The research demonstrated that significant increase in fracture toughness and fatigue life for fiber reinforced composites was achieved at a negligible weight gain. Dr. Bian also served as a Teaching Assistant in the Mechanics of Materials Laboratory class at the University of Texas at Dallas; he supervised teams of undergraduate students on how to design experiments for mechanical testing of various materials.

Academic Credentials & Professional Honors

Ph.D., Mechanical Engineering, University of Texas, Dallas, 2023

M.S., Materials Science, Missouri State University, 2018

M.S., Materials Science and Engineering, Zhengzhou University, 2015

Outstanding Teaching Assistant of the Department of Physics Astronomy and Materials Science, Missouri State University 2018

Prior Experience

Graduate Research Assistant, The University of Texas at Dallas, 2018-2023

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Professional Affiliations

American Society of Mechanical Engineers (ASME) – Member

Publications

R. Zhang, M. N. Kishore, N. Bian, et al. Experimental studies on fabricating functionally gradient material of stainless steel 316L-Inconel 718 through hybrid manufacturing: directed energy deposition and machining. The International Journal of Advanced Manufacturing Technology, 2022 May

R Zhang, N Bian, et al. Molten pool swing in printing the steel/Inconel functionally gradient material with laser-based Directed Energy Deposition. Manufacturing Letters, 2022 Apr; 32(C)

Sadeq Malakooti, Ethan Zhao, NicholasTsao, Ning Bian et al. Synthesis of aerogel foams through a pressurized sol-gel method. Polymer, 2020, 208 (122925)

Ning Bian, Robert A. Mayanovic, et al. Synthesis and Characterization of Co3O4@MnxCo3-xO4 Core-Shell Nanoparticles. MRS Advances 2018

Yang Zhang, Lixia Wang, Ning Bian et al. Morphology, Microstructure and Mechanical Properties of Micro Injection Molded Isotactic Polypropylene Parts. Polymer Materials Science & Engineering, 2016, 32(2)

WANG Jiajia, WANG Lixia, BIAN Ning et al. Influence of Shear History on Morphology, Microstructure and Mechanical Properties of Micro Injection Molded Parts. CIESC Journal, 2015, (5)

Presentations

Ning Bian, Ashutosh Shrivastava, Gabriel R Morel-Torres, Runyu Zhang, Samsuddin F Mahmood, Duck Joo Yang, and Hongbing Lu. Fuctionalized graphene-filled glass fiber composites for enhanced mechanical properties. Poster presentation, 2023 US-Korea Conference on Science, Technology and Entrepreneurship. August 2023, Dallas, TX

Ning Bian, Tingge Xu, Sadeq Malakooti, Xuemin Wang, Huiyang Luo, Samit Roy, Ray Baughman, and Hongbing Lu. Carbon Nanotube Sheet Scrolled Unidirectional Fiber Composite for Enhanced Strengths. Poster presentation WindSTAR Industrial Advisory Board Meeting, February 2020, Richardson, TX

Ning Bian, Robert Mayanovic, Mourad Benamara. Synthesis and Characterization of Co3O4-MnxCo3-xO4 Core-Shell Nanoparticles. Poster presentation, 2018 MRS Spring Meeting & Exhibit, April 2018, Phoenix, AZ

Peer Reviews

Mechanics of Time-Dependent Materials