



## Ken Zuo

Associate Professor

Department of Mechanical and  
Aerospace Engineering



Dr. Zuo is an Associate Professor of Mechanical Engineering at the University of Alabama in Huntsville. He has over 20 years of research experience in modeling the mechanical response of materials, including energetic materials (high explosives and solid propellants). Prior to joining UAHuntsville in 2006, he spent 7 years at Los Alamos National Laboratory working on modeling of materials under dynamic conditions (e.g., high-velocity impact). With his research collaborators, Dr. Zuo has developed several advanced models for deformation, damage, and failure of materials for high-rate applications. Some of them have been implemented in the analysis codes (Abaqus, EPIC) and are used in a wide range of applications. His current research interests include computational modeling of damage in brittle/quasi-brittle materials (explosives, solid propellants, concrete, sea ice, and glasses) under dynamic loading via a statistical consideration of defects (microcracks) in the materials.

Dr. Zuo is a senior member of American Institute of Aeronautics and Astronautics (AIAA), and a member of American Society of Mechanical Engineers (ASME), American Society of Civil Engineers (ASCE), American Physical Society (APS), and Sigma Xi: The Scientific Research Society. He is also an associate editor of International Journal of Theoretical and Applied Multiscale Mechanics, chair of Computational Structural Mechanics Session, the Huntsville Simulation Conference, a member of the ASCE Technical Committee on Modeling Inelasticity and Multiscale Behavior (MIMB), and a technical reviewer for a number of leading research journals and funding agencies.

### Contact Information:

University of Alabama in Huntsville  
301 Sparkman Drive, Huntsville, AL 35899  
qkz0001@uah.edu

[Link to Department Webpage](#)

[Link to Personal Webpage](#)

### RELEVANT PUBLICATIONS:

1. Zuo, Q.H., L.E. Deganis and G. Wang (2012), "Elastic Waves and Damage Quantification in Brittle Material with Evolving Damage", *Journal of Physics D: Applied Physics* 45 (145302): 1-8.
2. Deganis, L.E. and Q.H. Zuo (2011), "Crack-mechanics Based Brittle Damage Model Including Nonlinear Equation of State and Porosity Growth", *AIP Journal of Applied Physics* 109 (073504): 1-11.
3. Zuo, Q.H. (2011), "On the Uniqueness of a Rate-independent Plasticity Model for Single Crystals", *International Journal of Plasticity* 27: 1145-1164.
4. Zuo, Q.H. (2010), "Modified Formulation of a Rate-dependent Damage Model for Ductile Materials", *AIP Journal of Applied Physics* 107(053513): 1-5.
5. Zuo, Q.H. (2010), "On the Wave Speeds in Elastic-plastic Materials with Anisotropic Elasticity", *International Journal of Plasticity* 26: 1-24.
6. Zuo, Q.H. and D.J. Alldredge (2010), "Stability and Well-posedness of a Rate-Dependent Strain-softening Plasticity Model", *International Journal of Theoretical and Applied Multiscale Mechanics* 1: 195-218.
7. Zuo, Q.H., D. Disilvestro and J.D. Richter (2010), "A Crack-mechanics Based Model for Damage and Plasticity of Brittle Materials under Dynamic Loading", *International Journal of Solids and Structures* 47: 2790-2798.
8. Zuo, Q.H. and H.L. Schreyer (2010), "Effect of Deviatoric Nonassociativity on the Failure Prediction for Elastic-plastic Materials", *International Journal of Solids and Structures*, 47: 1563-1571.
9. Zuo, Q.H. and P.J. Maudlin (2009), "A Sub-grid Model for Localization in Metals under High-rate Loading: Formulations and Preliminary Results", *International Journal of Theoretical and Applied Multiscale Mechanics* 1: 107-117.
10. Zuo, Q.H. (2009), "Upper Bound on Wave Speeds in Anisotropic Materials Based on Elastic Projection Operators", *International Journal of Theoretical and Applied Multiscale Mechanics* 1: 16-29.