

## **Forming and Joining of Lightweight and Multi-material Systems**

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**2004 Black**

### **Abstract**

With increasing environmental concerns and demands for higher performance, lightweight construction is an important factor not only in the transportation industry but also in general engineering, e.g. machine-tools and architecture. Materials with high strength to weight ratio are considered as lightweight materials. However, these material components are difficult to be manufactured with conventional methods. Additionally, when joining components made by dissimilar materials for light weighting, it raises a challenge for joining/welding technology. This talk will review our recent progress on a multi-stage forming of aluminum and solid state joining methods. In particular, we will focus on constitutive modeling, anisotropy analysis and forming limit criterion development for the forming research; as well as process analytic modeling, microstructure evolution, and corrosion behavior for the dissimilar material joining techniques.

### **Biography**

Jingjing Li joined Department of Mechanical Engineering at University of Hawaii as an assistant professor in fall 2011. She received her Bachelor's degree from Beijing University of Aeronautics and Astronautics, China, in 2002, and Master's degree in Materials Science and Engineering from Tsinghua University, China, in 2005. She earned her Master's degree in Statistics in 2010 and Ph.D. in Mechanical Engineering in 2011, both from the University of Michigan. She is a guest editor for the ASME Journal of Manufacturing Science and Engineering, served on NSF panels, organized the 9th International Workshop on Microfactories (IWMMF 2014), and has served as track chairs for ASME International Manufacturing Science and Engineering Conferences (MSEC) since 2013. Her primary research interest focuses on materials processing and characterization, particularly on novel methodologies for multi-scale material characterization, mechanical behavior and failure analysis, and effect of microstructure on macroscopic properties.

***This seminar counts towards the ME 600 seminar requirement for Mechanical Engineering graduate students.***

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