

Preface

Joining Technologies for Composites and Dissimilar Materials represents one of ten volumes of technical papers presented at the 2016 SEM Annual Conference & Exposition on Experimental and Applied Mechanics organized by the Society for Experimental Mechanics and held in Orlando, FL, on June 6–9, 2016. The complete Proceedings also includes volumes on *Dynamic Behavior of Materials*; *Challenges in Mechanics of Time-Dependent Materials*; *Advancement of Optical Methods in Experimental Mechanics*; *Experimental and Applied Mechanics*; *Micro and Nanomechanics*; *Mechanics of Biological Systems and Materials*; *Fracture, Fatigue, Failure and Damage Evolution*; and *Residual Stress, Thermomechanics & Infrared Imaging, Hybrid Techniques and Inverse Problems*.

Composite materials are being increasingly utilized at multiple levels in application areas including automotive, aerospace, marine, biomechanical, and civil infrastructure, so the need for improved joining of these materials has become critical. While the design of the composite laminate is important, it is the ability to join sections of composite to one another or to components made of dissimilar materials that is the enabling technology for creating structures that approach optimum in function, weight, durability, and cost.

Composite joining technologies have been routinely classified in the past as either mechanical or adhesive. Increasingly, joint optimization requires combinations of the two types as well as the introduction of innovative new methods, such as composite welding, that provide high strength and light weight. Hybrid composite joints that allow the joining of composites to monolithic or other classes of material comprise another important technology that will facilitate the use of composites in many new application areas. Today, developments in composite joining technologies are progressing at a rapid rate, driven by both technology and user requirements.

This symposium addresses pertinent issues relating to design, analysis, fabrication, testing, optimization, reliability, and applications of composite joints, especially as these issues relate to experimental mechanics of macroscale and microscale structures.

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