

Séminaire commun
LaMCoS-Ecole Doctorale MEGA
Mécanique, Energétique, Génie Civil, Acoustique

**Material Modeling and Size Effect in
Composites and Metals**

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Jeudi 20 Septembre 2007 à 16 heures

INSA Lyon - Amphithéâtre Maurice Godet
Bâtiment J. d'Alembert, 18-20 rue des Sciences, Villeurbanne

Woven-fabric reinforced composites (hereafter referred to as woven composites) have attracted a significant amount of attention from both industry and academia, due to their high specific strength and stiffness as well as their supreme formability characteristics. This material has been utilized in the aerospace industry and showed the potential in automotive industry through a thermo-stamping process. This talk reviews the challenges in woven composites forming, from material variations, experimental material characterization methods to numerical modeling. Results from an international benchmark study on material shear behavior and friction between yarns will be presented (<http://nwbenchmark.gtwebsolutions.com>). A non-orthogonal material model has been proposed to model the behavior of woven composites. Finally, our other research activities will be briefly reviewed, ranging from grain size effects in microextrusion to an efficient method to predict variances in sheet metal forming.