Report

(1) Name of Lecturer:
Pascal FORQUIN

(2) Position:
Full Professor

(3) Affiliation:
Grenoble Alpes University

(4) Short Biography:
2013: Full Professor in Joseph Fourier University, 3SR laboratory, RVO team.
2011: Full Professor in Lorraine University, Laboratoire d'Etude des Microstructures et de Mécanique des Matériaux (LEM3)
2005: Assistant professor in Paul-Verlaine University (Metz), LEM3
2010: Habilitation à Diriger des Recherches, University of Lorraine, France
Title: Behaviour of brittle materials under dynamic loadings, experimental approaches and modelling
2003: PhD thesis in Ecole Normale Supérieure de Cachan, France
Title: Damage and cracking of brittle materials under ballistic impact, role of microstructure. PhD supervisor: F. Hild.

(5) Subject and Schedule of the Lectures:
14th July 2014, 16:20 – 17:50
Brief overview of Grenoble and Grenoble Alpes University, Introduction of recent research topics, Brittle materials and their fragmentation, Damage model and its application to numerical simulation, Experimental techniques
15th July 2014, 8:45 – 10:15
Introduction, examples of fragmentation in brittle materials (ceramics, infiltrated ceramics, glass, rocks, concretes and mortars); Tensile experiments for brittle materials at low strain-rates; Quasi-static behavior of brittle materials under three-point bending tests; Determine failure probability and Weibull parameters.
16th July 2014, 14:35 – 16:05
Determine volume effective in pure bending, three-point bending and four-point bending test to calculate Weibull parameters; Visualization of multiple fragmentation in brittle solids in edge-on impact experiments
17th July 2014, 12:50 – 14:20
Calculate density of cracking of brittle materials; Modelling the multiple fragmentation process in brittle solids at high strain rates (the Denoual-Forquin-Hill model); Modelling any sing/multiple fragmentation process in brittle solids (the Forquin-Hild model).
22nd July 2014, 8:45 – 10:15
Examples of problems needing dynamic testing of metallic materials; Use of split Hopkinson pressure bar techniques to characterize the behavior of metallic materials; Modelling of the dynamic behavior of metallic materials: phenomenological model, micro-mechanics based model, physical/phenomenological model.

(6) Comments:
A total of 5 students participated in this lecture. Through this lecture, students obtained knowledge related to fracture process of brittle materials and were broaden understanding about dynamic problems of metallic materials.
Students have shown a great interest in both 3h-lectures (Modelling single/multiple fragmentation processes in brittle solids, Use of Hopkinson pressure bar devices to characterize the dynamic behavior of materials) involving difficult and advanced concepts as:
- Failure probability, damage mechanisms, deterministic/stochastic behavior and brittle fracture,
- Propagation of waves in solids, Kolsky's processing, plasticity mechanisms, strain localization and adiabatic

shear bands.

Maybe in few parts of the lectures some students have faced difficulties in the perfect understanding of English technical words that might have limited joining the discussion with the group. I would recommend them continuing their effort to improve the possibilities of interacting in English.