

Workshop «Mechanics and Physics»

Effective toughness of heterogeneous materials

*Location: Institut Jean le Rond d'Alembert, room 311, tower 55-65, third floor
between tower 55 and 65 on the campus of Jussieu*

9h00 - 9h30: Workshop opening with breakfast and coffee

Brittle failure: from the microscale properties to the macroscopic toughness

9h30 - 10h15: Stéphane Roux (LMS, ENS Cachan):

From the microscale to the effective toughness of brittle materials: an overview

10h15 - 11h30: Shorts talks on brittle failure

Renaud Couzin (Institut d'Alembert, UPMC)

Design and optimization of asymmetric heterogeneous adhesives

Kay Wiese (LPS, ENS)

Avalanches dynamics of elastic manifolds driven in disordered solids

Jonathan Barès (SPCSI, CEA-Saclay)

Crack propagation in disordered brittle materials

Dominique Leguillon (Institut d'Alembert, UPMC)

Strengthening caused by a contrast in Young's moduli in laminate structures

Tristan Baumberger, (Institut des Nanosciences de Paris, UPMC)

From surface roughness to symmetry-breaking folds of slow cracks in soft solids

Lamine Hattali (FAST, Orsay)

Oscillatory fracture in PMMA

11h30 - 11h45: Coffee break

Quasi-brittle failure: from the microscale properties to the macroscopic toughness

11h45 - 12h30: Alex Hansen (Norwegian University of Science and Technology, Trondheim)

From the microscale to the effective toughness of quasi-brittle materials: an overview

12h30 - 12h45: Short talk on quasi-brittle failure

Julien Scheibert (LTDS, Lyon)

Quasi-brittle dynamic failure of PMMA

12h45 - 14h15: Lunch at «Amore Mio», 13 rue Linné

Ductile failure: from the microscale properties to the macroscopic toughness

14h15 - 15h00: Jean-Baptiste Leblond (Institut d'Alembert, UPMC)

From the microscale to the effective toughness of ductile materials: an overview

15h00 - 15h30: Short talk on ductile failure

Stéphane Chapuliot (Areva)

Ductile failure: examples and applications in the nuclear industry

Dirk Mohr (LMS, Ecole Polytechnique)

Hybrid experimental-numerical approach to investigate ductile fracture at low stress triaxialities

15h30 - 16h00: Coffee break

Discussion and conclusion of the day

16h00 - 16h45: Krishnaswamy Ravi-Chandar (University of Texas, Austin)

Challenges in fracture characterization and modeling