SACLAY

DIRECTION DES SCIENCES DE LA MATIERE,

DEPARTEMENT DE RECHERCHE SUR L'ETAT CONDENSE,
LES ATOMES ET LES MOLECULES,

SERVICE DE PHYSIQUE ET DE CHIMIE DES SURFACES ET DES INTERFACES

SEMINAIRE *

Lundi 20 Novembre 2006 à 11h00

Bâtiment 466, salle 111 - CEA Saclay, 91191, Gif sur Yvette

SELF-AFFINE FRACTURE EXPERIMENTS IN VARIOUS HETEROGENEOUS MATERIALS

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Invité par E. Bouchaud

Abstract:

We discuss self-affine fracture experiments in a variety of heterogeneous materials, including metals such as nickel alloys, aluminium and steel; ceramics such as opal glass, soda-lime glass and clay ceramics; polymers such as polystyrene, polypropylene, and polyamides; as well as composites such as concrete. We also discuss rupture experiments in paper and aluminium foil. These experiments are performed mainly in rapid conditions, only a few low-speed fracture experiments are discussed in relation to soda-lime glass. In general our results support the existence of universal or attractor values (0.5, 2/3, 0.8) for the roughness exponents; we explore also the possible relationships among microstructural parameters and the self-affine correlation length. These results are interpreted in terms of a qualitative model which allows for transitions from deterministic to more complex descriptions, particularly in the case of glass fracture; some speculations are made about the origin of the universality of the self-affine behavior in fracture and rupture phenomena.

*** SERA PRECEDE D'UNE PAUSE-CAFE A PARTIR DE 10H30**

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