IRAMIS

cea SACLAY

Application fields:

- Materials
- Fracture
- Failure analysis

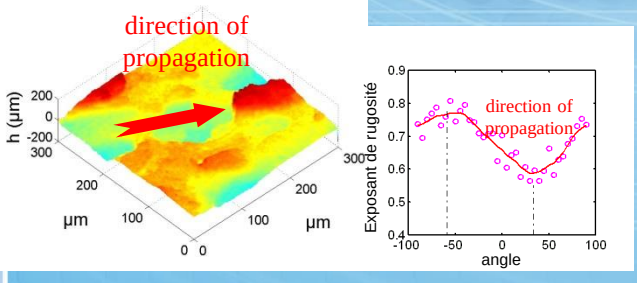
Determination of the propagation path of a crack from the morphology of fracture surface(s)

At first glance, it may seem difficult to infer the causes that brought the sudden break of a structure or a component. Fracture roughness however, encodes a part of this information. By carefully characterizing their statistics, it is possible to determine the directions followed by the cracks, then to go back to the fracture initiation points, and finally to assess what have happened!

Main features:

- Topography of fracture surfaces.
- Statistical analysis and identification of the fracture initiation points.
- Technique practicable for all materials (glass, ceramics, rocks, metals, mortar…) providing that the topographies are imaged at the relevant scales.

Application illustration



Fracture surface of aluminum alloy. The direction of propagation is that along which the measured roughness exponent is minimal

Method and system for determining the spreading path of at least one crack from a break surface or from a number of break surfaces created by this/these crack(s)
L. Ponson, E. Bouchaud et D. Bonamy, Brevet WO 2007/048934 A1

Fiche technologique

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