

Abstract Submitted  
for the MAR10 Meeting of  
The American Physical Society

**Propagation of a crack front in presence of a controlled disorder** JULIEN CHOPIN, ALEXIS PRÉVOST, AREZKI BOUDAOU, MOKHTAR ADDA-BEDIA — A interfacial front (wetting contact line, crack front, magnetic domain wall, ...) propagating in a heterogeneous landscape exhibits morphological and dynamical properties whose understanding remains imperfect. We designed an experiment where a crack front propagates at the interface of a quartz plate and an elastomer (PDMS). The quartz plate, initially covered by a nanometric layer of chromium, is patterned by holes of few tens of microns spatially modulating the fracture energy of the materials. An optimal control of the heterogeneities is achieved by optical lithography techniques allowing to investigate the statistical properties of the crack front. In particular we studied the dependence of the roughness exponent of fronts with the average speed of propagation.

Julien Chopin

Date submitted: 18 Dec 2009

Electronic form version 1.4