

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Relaxation mechanisms in the unfolding of thin sheets
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LPS-ENS — When a thin sheet is crumpled, creases form in which
plastic deformations are localized. Here we study experimentally the
relaxation process of a single fold in a thin sheet subjected to an ex-
ternal strain. The unfolding process is described by a quick opening at
first, and then a progressive slow relaxation of the crease. In the latter
regime, the necessary force needed to open the folded sheet at a given
displacement is found to decrease logarithmically in time, allowing its
description through an Arrhenius activation process. We accurately de-
termine the parameters of this law and show its general character by
performing experiments on both Mylar and paper sheets.

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Date submitted: 16 Dec 2011

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