

A Symposium on
COMPUTATIONAL MECHANICS OF SHARP FRONTS AND INTERFACES

To be held at the 6th US National Congress on Computational Mechanics, Dearborn, MI,
August 1-4, 2001
<http://www.usnccm.org>

An area of computational nonlinear mechanics in which several important advances remain to be made is the successful modeling of the formation, evolution, and response of interfaces, both internal and external, in solid and structural mechanics. Examples include the numerical implementation of contact and impact, computational fracture mechanics, effective shock capturing schemes in highly transient analyses, and advanced approximation technologies to handle interface evolution in problems spanning such diverse phenomena as phase transformation, fragmentation, and new-surface formation associated with biological systems and oxidation product growth. This symposium aims to gather researchers working on a wide range of applications fitting under this umbrella, with particular emphasis on the following fundamental issues in computational mechanics:

--Robust methodologies for transient interface mechanics (e.g., energy-momentum strategies in impact mechanics, mass-momentum advection methodologies in ALE frameworks, algorithms for growth/evolution of surfaces in fracture or phase transformation)

--Emerging approximation technologies for capturing interface behavior and treating discontinuities (e.g., meshfree, partition-of-unity, mortar element, and discontinuous Galerkin methods)

--Robust treatment of the geometric and functional description of evolving interfaces (e.g., level set methods, phase field models, immersed interface methods, general shock tracking and capturing)

--The mechanics of coupled phenomena on interfaces (e.g., thermo-mechanical frictional coupling, the thermodynamics of phase and crack nucleation, growth and/or surface deposition effects in biological systems or corroding media)

Theoretical contributions in these or related areas, as well as applications-oriented contributions demonstrating innovative uses of these technologies, would be particularly welcomed. Prospective authors are asked to electronically submit their contributions to either of the minisymposium organizers listed below by January 15, 2001.

Instructions relating to the format of these submissions, as well as details pertaining to the conference itself and the timeline leading up to it, can be found on the conference website, www.usnccm.org

Organizers:

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