

IUTAM Symposium dedicated to Professor Michael Ortiz

“Innovative numerical approaches for materials and structures in multi-scale problems”

September 1-4, 2014 at Burg Schnellenberg near Cologne (North Rhine-Westphalia, Germany)

Website: www.mb.uni-siegen.de/fkm/iutam_symposium_2014/

Abstract

During the past 15 years, research in the field of computational mechanics has advanced remarkably, mainly because of the development of a sound mathematical background and efficient computational strategies. Beyond the classical finite element method, several innovative techniques and novel approaches for the analysis of microstructural evolution, growth, damage, and structural failure in multi-field and multi-scale problems have emerged.

The aim of the proposed symposium is twofold. First, we would like to present a comparative overview of different computational strategies for multi-field and multi-scale problems, by gathering the most innovative –non necessarily the nowadays most popular– techniques. Second, we would like to open a forum to discuss new horizons and new perspectives of multi-field applied mechanics. In our vision, the topics of this symposium must cover a large domain of actual research, from computational materials modeling, including crystal plasticity, micro-structured materials, biomaterials, to multi-scale simulations of multi-physics phenomena. Particular emphasis will be on pioneering discretization methods for the solution of coupled non-linear problems at different length-scales.

For the Symposium a remarkable group of active scientists and engineers within well-defined research fields will gather. The symposium will be organized in a single session format, to encourage interactions and discussions between participants in the spirit of the IUTAM conferences format. The participation will be by invitation only. We plan to invite about 40 speakers and to run the symposium over a 4-day period.

The symposium will be dedicated to the 60th birthday of Professor Michael Ortiz. All along his outstanding career, Professor Ortiz has been at the forefront of computational mechanics, his work being a source of inspiration for many researchers working in different fields of applied physics and mathematics. In this sense, contributions will be welcome from various related disciplines, including materials mechanics, mathematics, physics, chemistry, and computational mechanics.