

PREFACE

This volume contains papers selected from more than 230 contributions presented during the 7th international conference “Materials Structure & Micromechanics of Fracture (MSMF-7)”, Brno, Czech Republic, July 1-3, 2013.

The first conference of the MSMF series was held in Brno, June 1995. The participants decided to repeat such conferences in Brno each three years. The basic idea was to establish a periodical international forum for multiscale approaches in fatigue and fracture of materials in the middle of Europe. Therefore, respective sections focused on atomistic models, models based on crystal defects, numerical and statistical continuum models, advanced experimental methods and relationships between microstructure and mechanical properties appeared during the MSMF-2 conference in 1998. The power of atomistic and mesoscopic approaches in fracture and fatigue was then clearly demonstrated by participants at the next MSMF meetings in 2001, 2004, 2007 and 2010. It should be emphasized that many world leading experts in the field of fracture and fatigue attended the MSMF conferences as plenary speakers.

The conference MSMF-7 has successfully curried on the tradition of previous conferences. Nearly 240 scientists from 32 countries all over the world presented a variety of fundamental relations between structural and mechanical characteristics of materials. In collaboration with the International Advisory Board, the organizers have asked Prof. Yukitaka Murakami (Kyushu University, Fukuoka, Japan), Prof. Huseyin Sehitoglu (University of Illinois, Urbana, USA), Prof. James Marrow (University of Oxford, Great Britain), Prof. Jean Petit (ENSMA Futuroscope, France), Prof. Stefano Beretta (Politecnico di Milano, Italy) and Prof. Otmar Kolednik (Austrian Academy of Sciences, Leoben) to prepare plenary key-note lectures. Additional top scientists were asked to give key-notes in sections. In this volume 186 papers based on atomistic, mesoscopic, macroscopic and multiscale approaches were included after a peer-review procedure.

It is my pleasure to thank the editorial board of the journal Key Engineering Materials for the readiness to publish this volume devoted to MSMF-7. I would also like to thank all members of the Organizing Committee, members of the International Advisory Board, session chairpersons as well as many colleagues who helped with the preparation of the conference and, particularly, with the preparation of the Proceedings.

September 2013

Pavel Šandera,
Editor