Preface

This special topic volume is a compilation of works contributed by experts from the international scientific community in the field of Wear and Contact Mechanics.

This volume presents ten papers that cover different aspects of the current areas of research in Wear and Contact Mechanics using new innovative theoretical and computational approaches based on the Finite Element Methods (FEM) and/or the Boundary Element Methods (BEM). A number of topics are addressed, such as anisotropic contact, anisotropic wear, crack-face contact and semi-permeable electric/magnetic boundary conditions in multifield materials (e.i. piezoelectric solids), dynamic contact modeling, fatigue crack growth life estimation, fatigue life assessment, fretting fatigue, fretting wear computing, rolling contact modeling, or treatment of nonmatching interfaces in contact problems.

The editors would like to thank the contributors of papers, the reviewers and the Key Engineering Materials Editorial Board for helping put together this special issue. Finally, we would like to dedicate this work to the memory of Prof. Ramón Abascal (1956-2013). He was a great researcher in this topic and, above all, a good person and friend.

Editors

Luis Rodriguez-Tembleque

M.H. Aliabadi

Prologue

Ramón A. Abascal García

(1956 – 2013)

Prof. Ramón Abascal was full professor of Continuum Mechanics and Theory of Structures at the “Escuela Técnica Superior de Ingeniería” (ETSI) of the University of Seville, Spain. He was born in Seville in 1956 and graduated in mechanical engineering at ETSI in 1979. He received his Ph.D. from University of Seville five years later and in 1986 started his teaching career as associated professor at the Department of Continuum Mechanics and Theory of Structures of the ETSI, becoming full professor in 1995.

His research interests were focused on the Boundary Element Method and its applications, with emphasis on elastodynamics (seismic wave propagation and scattering in non-homogenous viscoelastic soils, seismic response of foundations including dynamic soil-structure interaction and nonlinear contact effects due to uplift, guided wave scattering, and ultrasonic waves), fracture mechanics, contact problems (including friction, rolling and wear) and substructure coupling techniques using Lagrange multipliers. During his scientific career, he advised three Ph.D. students and published over forty papers in the most prestigious scientific journals.

But his dedication was not only restricted to research; he was also very concerned with the education of future engineers. He taught with excellence different subjects, such as: Theory of Structures, Advanced Analysis of Structures, Steel Structures and Advanced Finite Elements. Due to his commitment to academic excellence, Ramón was appointed Head of Studies at the ETSI from 2006 to 2010.

First as a Ph.D. student and later as a colleague, I have witnessed the enormous rigor, high demand and passion that Ramón projected on all his work. Everybody in the scientific and educational community, who were fortunate to know him, will remember his enormous generosity, his sense of humor, and, most of all, his significant scientific work. Colleagues and friends will never forget Ramón and will deeply regret losing him.

This work is dedicated to the memory of Prof. Ramón Abascal. We mourn his untimely death as we lose a great engineering educator, researcher and, above all, a good person and friend.

Luis Rodriguez-Tembleque