Foreword

International Symposium on the Environmental Damage under Static and Cyclic Loads in Structural Materials at Ambient Temperatures-II

The field of stress corrosion cracking (SCC) has made significant progress in terms of mechanistic interpretations. Two main mechanisms have emerged: anodic dissolution and hydrogen-assisted cracking. With the advent of new techniques in instrumentation to measure crack tip chemistry and fractography using SEM, crack tip microscopic examination using high resolution TEM, atomic probe microscopy for chemical analysis at the atomic level, *etc.*, newer insights into the understanding of SCC have emerged. Despite these advances, there continues to be a need for systematic experiments focused on environment, more insights into mechanistic analysis, and a method of quantification for component life prediction. In addition, there is also a need for an integrated approach for the prediction of the material response in smooth uniformly loaded specimens to notched specimens to pre-crack specimens in damaging environments under external static and cyclic loads.

This 2nd symposium on environmental damage under static and cyclic loads in structural materials was held during August of 2011 in Krakow, Poland, to bring experts from 12 countries together to discuss the issues and challenges in the field. The symposium focused on advancing our understanding of environmental-assisted cracking in structural metallic materials with an emphasis on “*how environment affects the crack driving force.*” The symposium had a good mix of experimental, theoretical, and computational modeling presentations and topics that ranged from the characterization of SCC of aluminum and steel alloys and the role of yield stress and aging treatments to chemistry of the environment, crack tip microscopy, and first principles modeling.

We thank the invited speakers and all the participants for their excellent contributions to the success of the symposium. We acknowledge a large number of referees for their timely submission of quality reviews. We thank the Editorial Board of *Metallurgical & Materials Transaction A* and, in particular, Prof. David Laughlin and Ms. Dora Moscatello for helping with the review process of the manuscripts. We also extend our appreciation to the members of ECI International Symposium Organizers: Ms. Barbara Hickernell and Dr. Dean Miller. The next symposium is planned to be held in Bergamo, Italy, during June 2013.

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