Materials Characterisation IV

Computational Methods and Experiments

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COMPUTATIONAL METHODS AND EXPERIMENTS IN
MATERIALS CHARACTERISATION

MATERIALS CHARACTERISATION 2009

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Carlos Brebbia
Wessex Institute of Technology
Ashurst Lodge, Ashurst
Southampton SO40 7AA, UK
Email: carlos@wessex.ac.uk

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Editors

A.A. Mammoli
University of New Mexico, USA

C.A. Brebbia
Wessex Institute of Technology, UK

WIT PRESS Southampton, Boston

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A.A. Mammoli
University of New Mexico, USA

C.A. Brebbia
Wessex Institute of Technology, UK

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Preface

Materials science in recent years has undergone rapid development in part as a consequence of advances in our ability to control and design at very small scales. Nanotechnology is seen as the new frontier in materials, with the promise of performance and functionality far exceeding today's standards. Many "conventional" materials are also benefiting from improvements in our ability to characterize them and better understand their behavior, often leading to incremental performance enhancements.

Characterization has by necessity kept pace with the development of new materials. In many cases, the characterization of complex behavior is made indirectly by the use of a model coupled with experimental data. In other cases, physical testing provides data to tune model parameters. The first part of the book is dedicated to the computational model – experiment interaction. Later sections contain a range of classical testing methods applied to innovative materials and composites, new testing methodologies, and two sections dedicated to cements and construction materials.

We note that many of the challenges that face society as a consequence of diminishing resources, especially energy, will in part be met by better materials, which ultimately should be designed and used with sustainability in mind.

We are confident that the conference will foster fruitful exchanges of ideas, which the book will extend to a wider audience still. The contents of this book reflect the quality of the submissions and the diligence of the reviewers, whom we wish to thank.

The Editors
New Forest, 2009

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