Surface Effects and Contact Mechanics IX

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METHODS AND EXPERIMENTS

CONTACT AND SURFACE 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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Surface Effects and Contact Mechanics IX

Computational Methods and Experiments

Editors:

J.T.M. De Hosson
University of Groningen, The Netherlands

C.A. Brebbia
Wessex Institute of Technology, UK

WIT PRESS Southampton, Boston

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J.T.M. De Hosson
University of Groningen, The Netherlands

C.A. Brebbia
Wessex Institute of Technology, UK

Published by

WIT Press
Ashurst Lodge, Ashurst, Southampton, SO40 7AA, UK
Tel: 44 (0) 238 029 3223; Fax: 44 (0) 238 029 2853
E-Mail: witpress@witpress.com
http://www.witpress.com

For USA, Canada and Mexico

Computational Mechanics Inc
25 Bridge Street, Billerica, MA 01821, USA
Tel: 978 667 5841; Fax: 978 667 7582
E-Mail: infousa@witpress.com
http://www.witpress.com

British Library Cataloguing-in-Publication Data

A Catalogue record for this book is available
from the British Library

ISBN: 978-1-84564-186-3
ISSN: 1746-4471 (print)
ISSN: 1743-3533 (on-line)

The texts of the papers in this volume were set individually by the authors or under their supervision. Only minor corrections to the text may have been carried out by the publisher.

Printed in Great Britain by Athenaeum Press Ltd.

Preface

This book contains papers presented at the Ninth International Conference on Surface Effects and Contact Mechanics held from June 9–11, 2009 in Algarve, Portugal. Previous conferences in the same series were organized in Southampton (1993), Milano (1995), Oxford (1997), Assisi (1999), Sevilla (2001), Crete (2003), Bologna (2005) and at Wessex Institute of Technology, Ashurst, UK (2007). This series of conferences is aimed at encouraging international collaboration among the participants and the exchange of new ideas. In particular the book deals with the interplay between applied physics, materials science, computational mechanics and mechanical engineering.

To an increasing degree the search is for surface modification techniques, which can increase the wear and corrosion resistance of materials. Unfortunately, there exists an almost bewildering choice of surface treatments that cover a wide range of thickness. It is worth noting here that wear resistance is a property, not of materials but of systems, since the material of the work-piece always wears against some other medium. It is its relation to its environment – e.g. lubrication, speed of sliding/rotation – that determines the wear and corrosion resistance of the material in a given construction. The characteristics of the system, e.g. whether the wear is caused by delamination or abrasion, determine which of the surface engineering methods should be chosen. The combination surface treatment and contact mechanics is an important one.

In this book various new developments are highlighted, both from an experimental and computational viewpoint. Special emphasis is given to the application of advanced theoretical and experimental approaches. Papers have been grouped into the following subject areas:

- Surface treatments
- Thick coatings
- Thin coatings
- Surface problems in contact mechanics
- Indentation and hardness
- Fatigue

- Numerical analysis
- Applications and case studies

Thanks are due to the authors for their contributions. The editors are also grateful to the members of the International Scientific Advisory Committee, and other colleagues, who helped in the reviewing process to ensure the quality of the conference and this book.

The Editors
Algarve, 2009

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