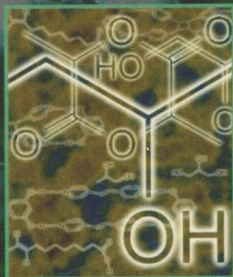


Sustainable Chemistry

EDITED BY
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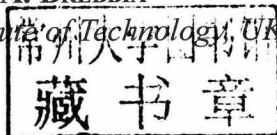
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Preface

Chemical products make an irreplaceable contribution in every aspect of our modern-day lives. Chemical processes and products play an essential role in industrial sectors as diverse as agriculture, automotive, clothing, communication, construction, food, health, leisure, mobility, plastics, space, transport, etc. We can easily observe that our advanced society depends on the wealth-creating aspects of industrial chemistry.

Societal expectations and the depletion of natural resources are pushing towards chemical processes becoming cleaner, more efficient, less consuming, safer and more secured. The ecological footprint of chemical products needs to be decreased.

Sustainable chemistry being concerned with the development of sustainable chemical products and processes and thereby integrating economic, environmental and social performance, can provide an answer to these major challenges.

The technological and managerial objectives of scientific and industrial research and activities are quite straightforward; decrease the use of energy and fossil materials, develop clean, safe and secured processes, produce useful, safe and sustainable products, develop a long-term scope for transportation activities, etc., always taking factors such as cost-effectiveness, eco-efficiency and inherent safety into consideration.

A clear interdisciplinary approach within technological areas, supported by cross-cutting managerial actions, is required for successful tackling these new chemistry paradigms.

This book includes papers presented at the 1st International Conference on Sustainable Chemistry (CHEM 2011). The meeting provided a forum for the presentation and discussion of the most recent developments in the theoretical and practical aspects of sustainable chemistry. The topics covered by the various

presenters included:

- Eco-efficiency
- Smart Processing technology for sustainability
- Improvement in catalysis
- Multifunctional materials
- Bio-based materials
- Environmental health issues

The Editors would like to express their appreciation of the valuable advice they received from the members of the International Scientific Advisory Committee and thank the contributors for the quality of their papers.

The Editors,
Antwerp, 2011



WITPRESS ...for scientists by scientists

The Sustainable City VI

Urban Regeneration and Sustainability

Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK, S. HERNÁNDEZ, University of La Coruña, Spain and E. TIEZZI, University of Siena, Italy

Urban areas produce a series of environmental problems arising from the consumption of natural resources and the consequent generation of waste and pollution. These problems contribute to the development of social and economic imbalances. All these problems, that continue to grow in our society, require the development of new solutions. The Sustainable City 2010 follows five very successful meetings held in Rio (2000); Segovia (2002); Siena (2004); Tallinn (2006) and Skiathos (2008). The Conferences attracted a substantial number of contributions from participants from different backgrounds and countries. The variety of backgrounds and experiences is one of the main reasons behind the success of the series.

The papers from the 2010 conference are published under the following topics: Planning, Development and Management; Landscape Planning and Design, The Community and the City; Urban Strategies; Urban-Rural Relationships; Architectural Issues; Cultural Heritage Issues; Waste Management; Case Studies; Environmental Management; and Energy Issues.

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Food and Environment

The Quest for a Sustainable Future

Edited by: V. POPOV and C.A. BREBBIA, Wessex Institute of Technology, UK

The many advances in food production over the past century have made it possible to feed the whole of humanity. But food production and processing can have detrimental effects on the environment. Major challenges remain with industrial-scale farming. Higher productivity and larger volumes should not come at the expense of product quality or animal suffering.

Despite their importance, the consequences of food-related problems have not been sufficiently considered. It is essential to understand the impact that food production processes and the demands of rising living standards can have on the food consumed daily by the world's people. Of particular importance are the effects on human health and the well-being of the population, as well as the more general issues related to possible damage to the environment and ecology. This book includes contributions presented at the first international conference convened to examine these challenges.

Topics include; Food Processing Issues; Contamination of Food; Pharmaceuticals in Food; Obesity-Related Issues; Pesticides and Nutrients; Hormonal Effects; Food and Fecundity; Genetic Engineering; Freezing and Thawing; Heavy Metals; Pathogens; Salination Problems; Desertification; Transportation Problems; Traceability; Threshold Values; Modern Farming; Changing Climate; Laws and Regulations; Epidemiological Studies; Water Resources Problems; and Animal Welfare. The book will be of interest to food scientists and nutritionists, as well as agricultural, ecological, and environmental health experts interested in all these challenges.

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Sustainable Development and Planning V

Edited by: C.A. BREBBIA, Wessex Institute of Technology, UK

This book contains the proceedings of the latest in a series of biennial conferences on the topic of sustainable regional development that began in 2003. Organised by the Wessex Institute of Technology, the conference series provides a common forum for all scientists specialising in the range of subjects included within sustainable development and planning. It has become apparent that planners, environmentalists, architects, engineers, policy makers, and economists have to work together in order to ensure that planning and development can meet our present needs without compromising future generations.

The topics covered by the papers included in the book include: City planning; Regional planning; Social and political issues; Sustainability in the built environment; Rural developments; Cultural heritage; Transportation; Ecosystems analysis, protection and remediation; Environmental management; Environmental impact assessment; Indicators of sustainability; Sustainable solutions in developing countries; Sustainable tourism; Waste management; Flood risk management; Resources management; and Industrial developments.

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Energy and Sustainability III

Edited by: Y. VILLACAMPA, University of Alicante, Spain, C.A. BREBBIA, Wessex Institute of Technology, UK and A.A. MAMMOLI, University of New Mexico, USA

It has been clear for some time that the way in which our society exists, operates, and develops is strongly influenced by the way in which energy is produced and consumed. No industrial process can proceed without an adequate energy supply, and without industrial production, society lacks the commodities on which it depends.

Our energy systems have evolved over a long period and continue evolving in response to the needs of both Industry and Society. This evolution involves technological development and innovation, especially now that we need to look beyond simple fuel combustion as a source of energy and consider both greater efficiency in the use of energy and new ways of producing it.

The Third International Conference convened on the subject is the latest in a biennial series that brings together experts from around the world. Their papers, contained in this book, will include research on: Renewable Energy Technologies; Energy Management; Energy Policies; Energy and the Environment; Energy Analysis; Energy Efficiency; Energy Storage and Management; Conversion Process for Biomass and Biofuels; CO² Sequestration and Storage.

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