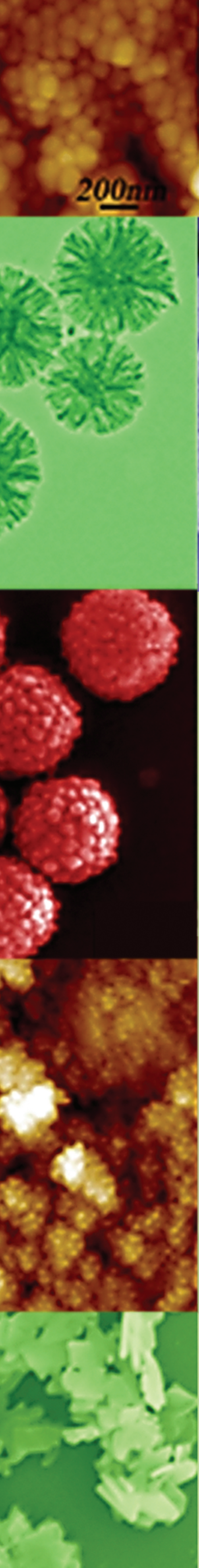

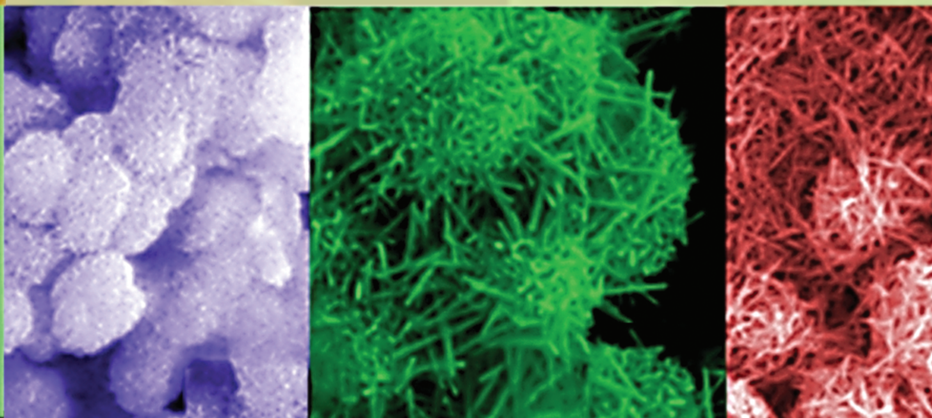

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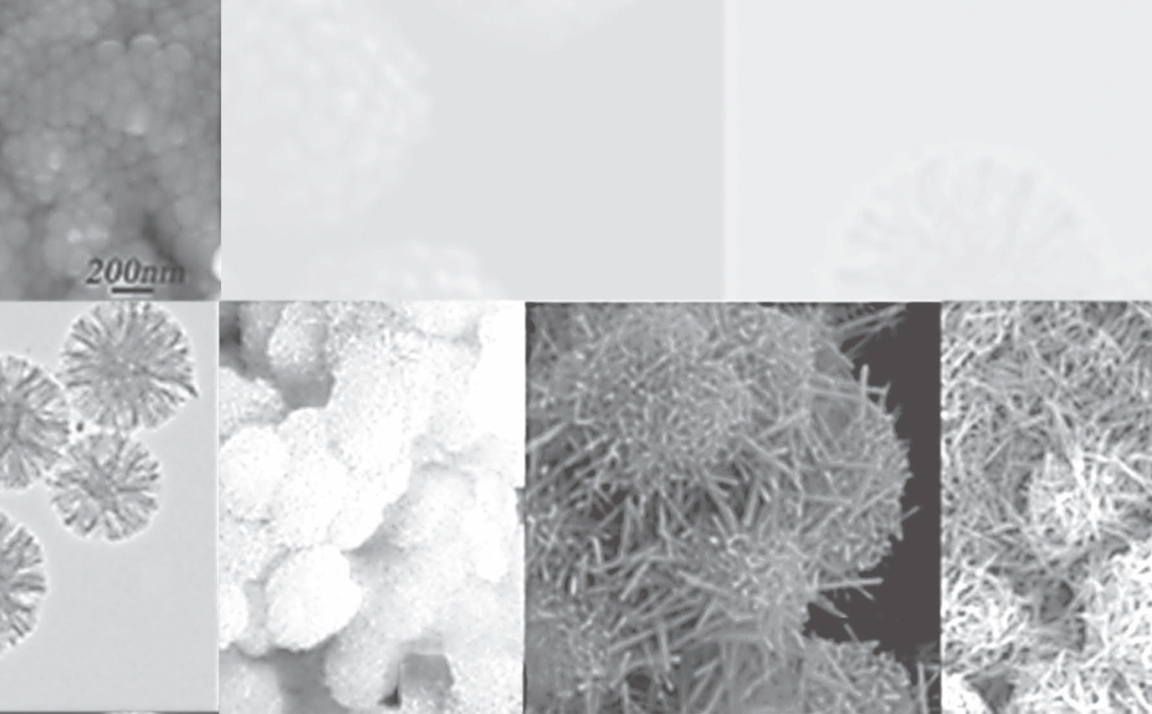
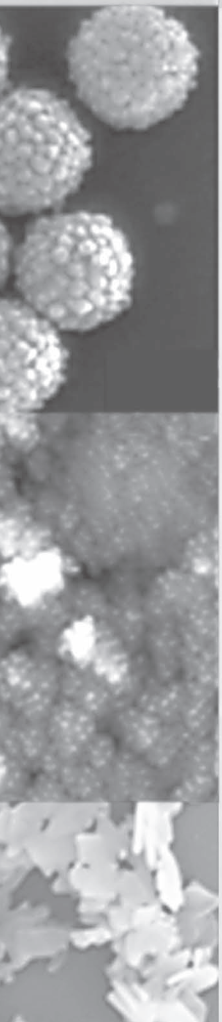
Nanomaterials in Energy and Environmental Applications





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Pan Stanford Publishing

Published by

Pan Stanford Publishing Pte. Ltd.
Penthouse Level, Suntec Tower 3
8 Temasek Boulevard
Singapore 038988

Email: editorial@panstanford.com
Web: www.panstanford.com

British Library Cataloguing-in-Publication Data
A catalogue record for this book is available from the British Library.

Nanomaterials in Energy and Environmental Applications

ISBN 978-981-4463-78-2 (Hardcover)
ISBN 978-981-4463-79-9 (eBook)

Printed in the USA

Contents

Preface

Nanoscience and nanotechnology are interdisciplinary fields that bring together physicists, chemists, materials scientists, biochemists, and engineers to meet current and potential future challenges that humankind faces, including searching for renewable energies for sustainable development and new technologies for carbon capture and environmental protection. Among the current subjects in nanoscience and nanotechnology, nanomaterials are developing fast and explosively and attract a huge amount of attention. They have recently shown emerging applications and continue to show promising potentials in technologies such as solar cells, fuel cells, secondary batteries, supercapacitors, air and water purification, and removal of both domestic and outdoor air pollutants. The application of nanomaterials has also drawn attention to their effects on human health. This book invited experts in the fields of nanomaterials, energy, and environmental science and assembled 13 reviews that discuss the design and fabrication of nanostructured materials and their energy and environmental applications.

This is the first book that summarizes the very recent efforts through nanoscience and technology towards meeting the pressing energy and environmental challenges that human beings are facing. It also points out future directions of nanomaterial development and encourages future efforts, especially by the younger generation.

Finally, I would like to take this opportunity to acknowledge all the authors who had spent their precious time in preparing their great contributions to the book. I would also like to thank Dr. Mingqing Yang, who contributed a lot to the communication with the authors and preparation and publication of the book. I am very grateful to Pan Stanford Publishing for providing me an opportunity to publish this book. I hope that the readers will find the contents both useful and enjoyable.

Junhui He

Beijing

June 2016