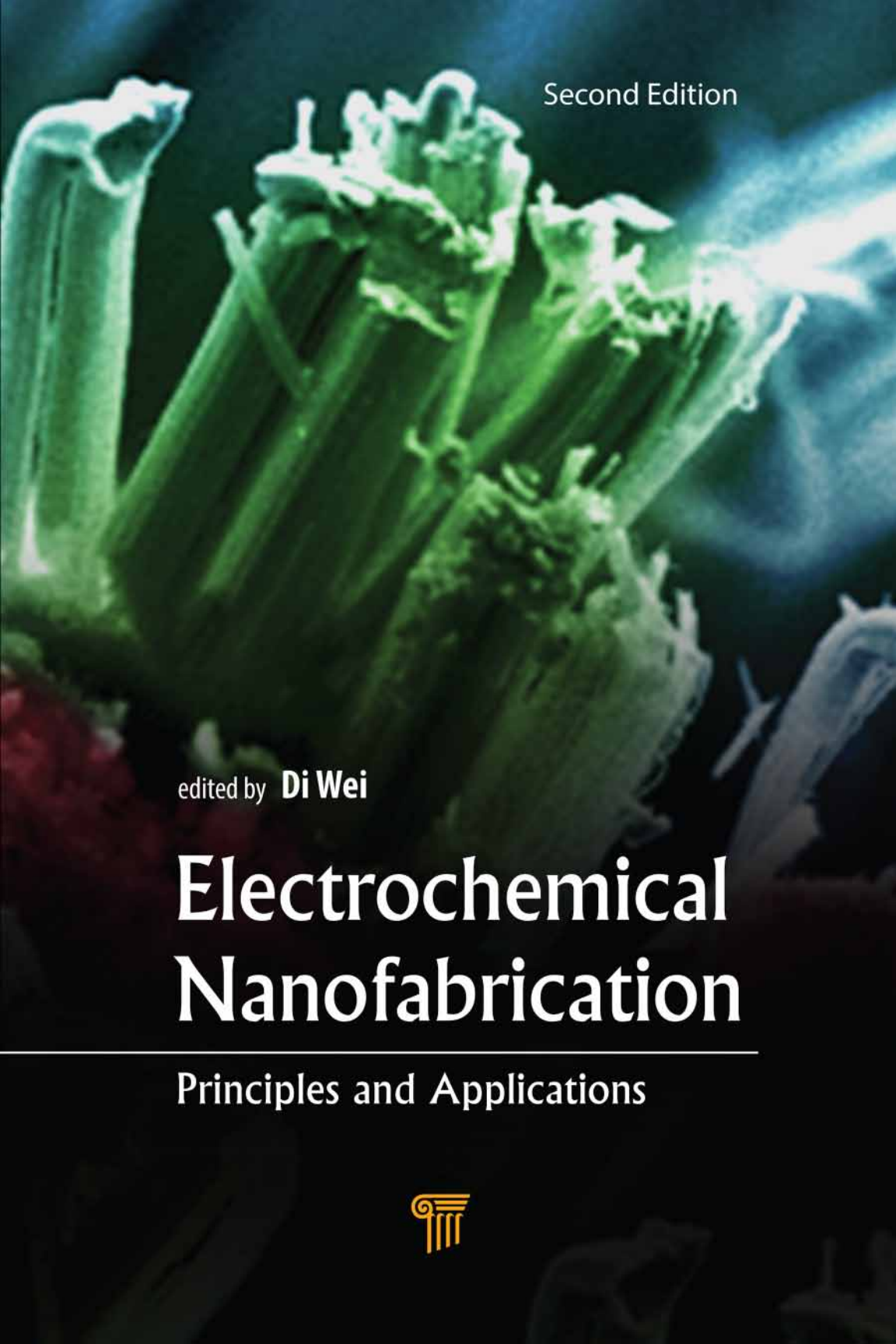
Second Edition
edited by Di Wei
Electrochemical Nanofabrication
Principles and Applications

Preface

With the development of nanotechnology and nanomaterials, the arena of electrochemical nanofabrication has expanded significantly. The first version of the book was drafted in 2009. In 2010, the Nobel Prize in Physics was awarded to Prof. Konstantin Novoselov and Prof. Andre Geim from the University of Manchester for groundbreaking experiments regarding the two-dimensional material graphene. Three years later, the European Commission launched the European Union's biggest-ever research initiative, the Graphene Flagship, with a budget of 1 billion euro. This has boosted the research on graphene globally.

As Nokia's representative involved in the Graphene Flagship from the very beginning, I believe the two-dimensional wonder materials are defining a new scope of research in electrochemistry. This is also the motivation for us to collect new advances on applying graphene in different electrochemical devices such as electrochemical sensors and energy solutions. In this second edition, the book is enriched with the synthesis of graphene-based materials through electrochemical methods, the applications of graphene in lithium ion and sodium ion batteries, and using graphene composites for different sensing platforms. This will be of great interest to a broad audience in nanotechnology and electrochemistry.

Di Wei

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Contents

"*This book provides an innovative and thought-provoking view of electrochemical processes in nanofabrication. A comprehensive overview of the field is complemented by focused coverage of niche specialist topics involving metallic, oxide and polymeric materials in diverse combinations and complex interfacial architectures. A pedagogical approach to the central fundamental concepts allows the non-specialist to appreciate the significance of some perceptive subsequent analytical critique. Excellent use of illustrative material assists appreciation of the synergy between the novel fundamental science and its application in practical devices. This is an excellent book for those working in the field and others considering entering it.*"

Prof. A. Robert Hillman
University of Leicester, UK

Nanotechnology has attracted billions of dollars in venture capital from research institutes, governments, and industries in recent years. Traditional nanofabrication techniques such as CVD, sol–gel, and self-assembly have been intensively studied. However, the electrochemical nanofabrication technique, which offers huge benefits for manufacturing nanomaterials as well as broad applications in industries, has not been given much attention compared with the traditional nanofabrication methods. This book fits the niche of such technology because it summarizes various electrochemical nanofabrication methods and shows their various essential applications in areas such as batteries, sensors, and many future technologies.

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Di Wei is a senior member of Wolfson College at the University of Cambridge and senior researcher at Nokia Technologies. He was also nominated docent (adjunct professor) at Åbo Akademi University, Finland, in 2014. He has been Nokia's principal investigator in energy work package within the European Union's Graphene Flagship since 2013. His research covers organic electronics, sensors, and energy solutions (photovoltaics, supercapacitors, and batteries). In addition to contributing to over 50 peer-reviewed journal publications, 30 conference proceedings, 5 keynotes, and 50 international patents, Dr. Wei has written chapters for 4 books on the topics of nanotechnology and electrochemistry.

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