

Compendium of Surface and Interface Analysis

The Surface Science Society of Japan
Editor

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Preface

Surfaces and interfaces are the places where the rotation/inversion symmetry of the crystal is broken and therefore the electronic and geometric structures significantly differ from those in bulk, leading to the unique electric, magnetic, catalytic and optical properties. In addition, various interesting processes such as adsorption/desorption, etching, deposition, corrosion, and electron transfer and catalytic reactions take place at the surfaces and interfaces. Since the electronic, geometric and molecular structures of surfaces and interfaces play crucial roles in those interfacial processes, it is important to understand such structures as well as the elemental composition.

Despite the importance of surface and interface analysis, it is generally more difficult than bulk analysis because the very small number of atoms is the subject of investigations and the signals from the surface species are often buried within those from bulk. Therefore, tremendous effort has been dedicated to the development of analysis techniques which can extract the information of the surface species from those of bulk with a high sensitivity and selectivity.

This book covers various surface analysis techniques to investigate the morphology, atomic structure, electronic structure and properties of the surfaces and interfaces. In each chapter, experts of the corresponding techniques briefly describe their principle, features and instrumentation together with a few examples of related works, so that readers can understand the capabilities of the techniques and requirements for the use in their own researches. The list of techniques summarized in this book is available from <http://extras.springer.com>. We hope that this book is useful to a wide range of scientists and students who study in this research field or start to do.

Finally, we thank Springer Publishing, especially Dr. Shin'ichi Koizumi, Ms. Risa Takizawa, for giving us an opportunity to edit such a book and all the authors for accepting to contribute to this book, and we hope that the readers will find this book both useful and delightful.

Tokyo, Japan
March 2017

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The original version of the book was revised: Belated corrections have been incorporated. The correction to the book is available at https://doi.org/10.1007/978-981-10-6156-1_135

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