

Diffraction at the Nanoscale
Nanocrystals, Defective
& Amorphous Materials

Edited by A. Guagliardi and N. Masciocchi



Foreword

Three years after the publication of the book “*Analisi di materiali policristallini mediante tecniche di diffrazione*” by Insubria University Press, we deemed it necessary to widen the scope of our earlier contributions, and to focus on a frontier, subject, such as the development of new techniques for characterizing finite nanosized objects through a combination of scattering and imaging techniques.

According to this goal, the *Italian and Swiss Crystallographic Societies*, together with the *Paul Scherrer Institut* in Villigen (CH) have jointly organized an International Summer School entitled “*Diffraction at the Nanoscale: Nanocrystals, Defective & Amorphous Materials*”, in which renowned experts in the field have delivered lessons, demo and tutorial sessions, with extensive hands-on personal work by the students, including data collection with synchrotron radiation.

This book collects the contributions from some of the experts in the field, and is specifically targeted to the new generation of crystallographers and material scientists, dealing with nanocrystalline and defective materials. Both the novice and the experienced scientists will likely find new and relevant scientific aspects, as well as a large bibliographic section. Three main sections can be distinguished: *Part A*, contributions exemplifying the wide world of nanomaterials, requiring new powerful tools for nanostructural characterization; *Part B*, theoretical aspects of total scattering methods, simulation and modelling techniques; *Part C*, principles and applications of imaging techniques.

We wish to heartily thank all Authors of the different Chapters, since the timely assembly of this book would not have been possible without their invaluable enthusiasm and their spontaneous volunteering.

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The Editors

A. Guagliardi and N. Masciocchi

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