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K. Busch A. Powell C. Röthig
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CFN Lectures on Functional Nanostructures

Vol. 1

Springer

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K. Busch, A. Powell, C. Röthig, G. Schön, J. Weissmüller (Eds.), *Functional Nanostructures*, Lect. Notes Phys. **658** (Springer, Berlin Heidelberg 2004), DOI 10.1007/b100127

Library of Congress Control Number: 2004110450

ISSN 0075-8450
ISBN 3-540-22929-9 Springer Berlin Heidelberg New York

Typesetting: Camera-ready by the authors/editor
Data conversion: PTP-Berlin Protago-TeX-Production GmbH
Cover design: *design & production*, Heidelberg

Printed on acid-free paper
54/3141/ts - 5 4 3 2 1 0

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Preface

This book contains a selection of lectures from the first CFN Summer School on Functional Nanostructures which took place from September 24$^{\text{th}}$ to September 27$^{\text{th}}$, 2003 in Bad Herrenalb in the Black Forest of Germany. The DFG-funded CFN, or Center for Functional Nanostructures, was founded in July 2001 at the Universität Karlsruhe (TH) and the Forschungszentrum Karlsruhe. Additional funding comes from the State of Baden-Württemberg and from the home institutions, Universität and Forschungszentrum. The mission of the CFN is to investigate nanoscale functional materials within the following broad research areas:

A Nanophotonics
B Nanoelectronics
C Molecular Nanostructures
D Nanostructured Materials

The CFN is made up of a wide range of research groups from 15 different Institutes in Karlsruhe bringing a variety of scientific backgrounds together. The Center thus provides a melting pot where various talents can be combined to address the problems associated with creating functional nanoscale materials. At the same time, the members of the Center are acutely aware of the need to develop a common language to facilitate communication amongst the various disciplines, and thus the idea of holding Summer Schools to bring groups across the four research areas together evolved. The remit of the Summer Schools is to allow members of the CFN and external participants to exchange ideas and explain research methods and strategies through a series of lectures designed both to introduce unfamiliar concepts and discuss the benefits and problems associated with various research methods including many which are highly specialised.

Chapters 1–4 of these Lecture Notes are devoted to research area A (Nanophotonics), Chaps. 5–9 to B (Nanoelectronics) while the last two chapters give a flavor of research areas C (Molecular Nanostructures) and D (Nanostructured Materials).

The lecture notes we have brought together here represent a selection of the presentations made at the Summer School in 2003 and are designed to provide a useful starting point for those interested in learning more about this rapidly developing area of science. It is hoped that they will not only provide a useful working text, but also arouse interest in our activities in Karlsruhe within the CFN.

We would like to take this opportunity to thank all the authors who have contributed to this volume for their valuable input as well as all the participants at the Summer School for helping to make this interdisciplinary venture such a success.

Karlsruhe,
March 2004

Kurt Busch
Annie Powell
Christian Röthig
Gerd Schön
Jörg Weissmüller

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