

Contents

Introducing Molecular Electronics: A Brief Overview

<i>Gianaurelio Cuniberti, Giorgos Fagas, and Klaus Richter</i>	1
1 A Passage Through Time: Past, Present and Future Challenges .	1
2 What You Find in the Book – a Passage Through Its Contents ..	4
3 What is not Included in the Book – Literature Hints	6
References	8

Part I Theory

1 Foundations of Molecular Electronics – Charge Transport in Molecular Conduction Junctions

<i>Joshua Jortner, Abraham Nitzan, and Mark A. Ratner</i>	13
1.1 Prologue	13
1.2 Theoretical Approaches to Conductance	18
1.3 The Relationship Between Electron Transfer Rates and Molecular Conduction	21
1.4 Interaction with Nuclear Degrees of Freedom	22
1.5 Remarks and Generalities	32
References	45

2 AC-Driven Transport Through Molecular Wires

<i>Peter Hänggi, Sigmund Kohler, Jörg Lehmann, and Michael Strass</i>	55
2.1 Introduction	55
2.2 Basic Concepts	56
2.3 Floquet Approach to the Driven Transport Problem	59
2.4 Weak-Coupling Approximations	65
2.5 Photon-Assisted Transport Across a Molecular Bridge	70
2.6 Conclusions	72
References	73

3 Electronic Structure Calculations for Nanomolecular Systems

<i>Rosa Di Felice, Arrigo Calzolari, Daniele Varsano, and Angel Rubio</i> . . .	77
3.1 Electronic Structure of Nanomolecular Systems	77

Introducing Molecular Electronics

Cuniberti, G.; Fagas, G.; Richter, K. (Eds.)

2005, XIX, 517 p., Hardcover

ISBN: 978-3-540-27994-5