



Molecular switches

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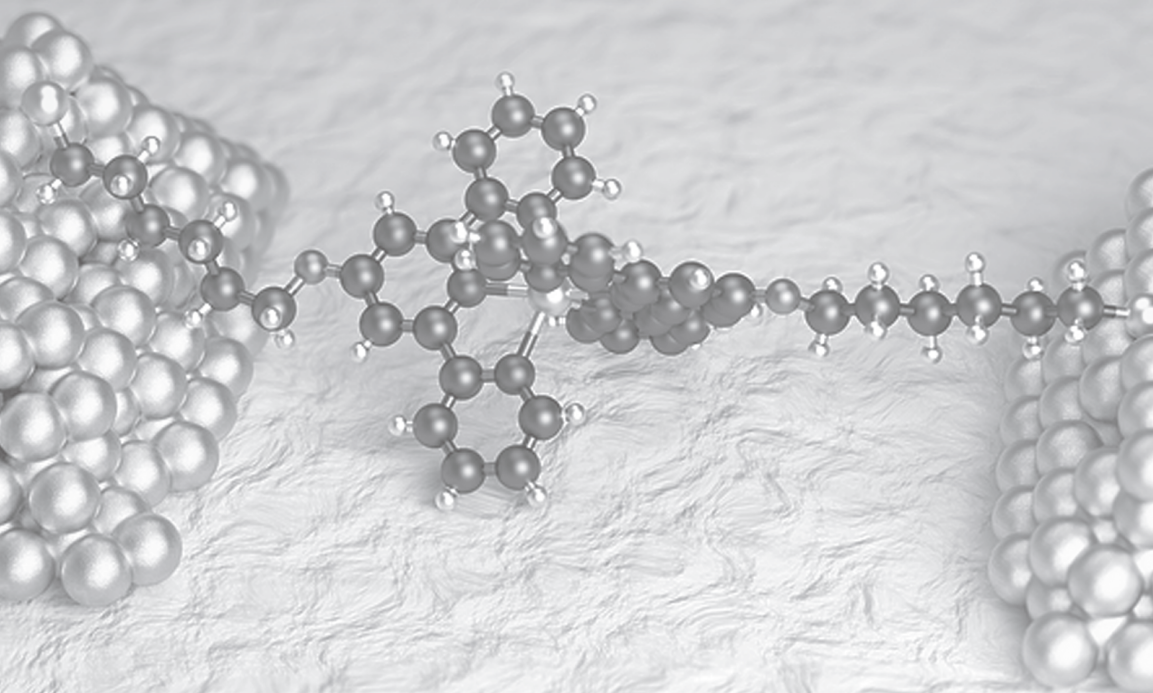
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Handbook of
SINGLE-MOLECULE
ELECTRONICS



Handbook of
**SINGLE-MOLECULE
ELECTRONICS**

edited by
Kasper Moth-Poulsen

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Contents

<i>Preface</i>	xiii
1 Introduction	1
<i>Kasper Moth-Poulsen</i>	
2 Experimental Techniques	5
<i>Kasper Moth-Poulsen</i>	
2.1 Introduction	5
2.2 Experimental Techniques	6
2.2.1 Mechanical Techniques	7
2.2.1.1 Scanning tunneling microscope	8
2.2.1.2 Atomic force microscope	9
2.2.1.3 Mechanically controlled break junction	11
2.2.2 Nanofabrication Methods	13
2.2.2.1 Electromigration	13
2.2.2.2 Evaporation methods	14
2.2.2.3 Direct manipulation methods	15
2.2.2.4 Low-dimensional electrode materials	16
2.2.3 Self-Assembled Devices	18
2.3 Identifying Single Molecules in Devices	19
2.3.1 Statistics	19
2.3.2 Single-Molecule Signatures	20
2.3.3 Possible Artifacts	23
2.4 Summary and Conclusion	24
3 Basic Theory of Electron Transport Through Molecular Contacts	31
<i>Anders Bergvall, Mikael Fogelström, Cecilia Holmqvist, and Tomas Löfwander</i>	
3.1 Introduction	31

3.2	Electron Transport Through a Single-Level Quantum Dot	34
3.3	Recursive Green's Function Technique	43
3.3.1	Local Properties	47
3.3.2	Further Optimizations	49
3.4	Graphene Leads: Gate-Tunable Quantum Coherent Transport	50
3.5	Molecular Contact between Superconducting Leads	61
3.5.1	General Methods	63
3.5.2	One-Iteration Approximation	66
3.5.3	Results	67
3.6	Summary	72
4	First-Principles Simulations of Electron Transport in Atomic-Scale Systems	79
	<i>Thomas Frederiksen</i>	
4.1	Introduction	79
4.2	The DFT+NEGF Approach	81
4.3	Application: Conductance of a Single C ₆₀ Molecule Junction: Atom-by-Atom Engineering of the Electrode Interface	85
4.4	Electron-Vibration Interactions	92
4.5	Inelastic Transport with DFT+NEGF	95
4.6	Lowest-Order Expansion Approach	98
4.7	Application: Inelastic Conductance Signals in Atomic Gold Chains	101
4.8	Inelastic Effects in Shot Noise	105
4.9	Application: Inelastic Shot Noise Signals in a Gold Point Contact	107
4.10	Summary	110
5	Controlling the Molecule–Electrode Contact in Single-Molecule Devices	117
	<i>Joshua Hihath</i>	
5.1	Introduction and Background	118
5.2	Contact Resistance of Molecular Wires	121
5.3	Molecular Linkers and Contact Geometry	127

5.3.1	Break-Junction Techniques for Single-Molecule Junctions	128
5.3.2	Alkanedithiols	130
5.3.3	Varying the Molecule–Electrode Contact	135
5.4	Mechanical Control of Molecule–Electrode Coupling	138
5.5	Mechanical Control of Molecular Energy Levels	142
5.6	Summary and Conclusions	145
6	Vibrational Excitations in Single-Molecule Junctions	155
	<i>Johannes S. Seldenthuis, Herre S. J. van der Zant, and Joseph M. Thijssen</i>	
6.1	Introduction	156
6.2	Vibrational Modes	157
6.2.1	Born–Oppenheimer Approximation	158
6.2.2	Harmonic Oscillator	159
6.2.3	Morse Potential	161
6.3	Franck–Condon Principle	162
6.3.1	Electron–Phonon Coupling	164
6.3.2	Recursion Relations	165
6.3.2.1	Single harmonic oscillator	165
6.3.2.2	Multiple harmonic oscillators	167
6.3.3	Numerical Evaluation	170
6.3.3.1	Example: emission spectrum of Pt(4,6-dFppy)(acac)	170
6.4	Vibrational Modes in Transport: Weak-Coupling Regime	172
6.4.1	Master Equation	172
6.4.1.1	Transition rates	173
6.4.1.2	Calculating the properties of interest	175
6.4.1.3	Numerical evaluation	176
6.4.2	Selection Rules	178
6.4.2.1	Single-level model	178
6.4.2.2	Example: weakly coupled OPV-5 junction	180
6.5	Vibrational Modes in Transport: Strong-Coupling Regime	183
6.5.1	Nonequilibrium Green’s Function Formalism	184
6.5.1.1	Second quantization	184

6.5.1.2	Elastic transport	185
6.5.1.3	Inelastic transport	187
6.5.2	Selection Rules	190
6.5.2.1	Example: strongly coupled OPE-3 junction	190
6.5.3	Franck–Condon Factors Revisited	193
7	Self-Assembly at Interfaces	205
	<i>Tina A. Gschneidner and Kasper Moth-Poulsen</i>	
7.1	Introduction	206
7.2	Self-Assembled Monolayers	209
7.2.1	Inter- and Intramolecular Interactions between the Molecule and the Surface	209
7.2.2	Chemisorption vs Physisorption	214
7.2.3	How Do Molecules Arrange on a Gold Surface?	217
7.2.4	Adsorption Sites on Gold [Au(111)]	219
7.3	Gold and Other Materials	223
7.3.1	Why is Gold the Most Prominent Example for Self-Assembly?	223
7.3.2	Silicon Surfaces	225
7.3.3	Graphene for Self-Assembled Electrodes	226
7.4	Summary and Conclusion	228
8	Molecular Switches	233
	<i>Mogens Brøndsted Nielsen</i>	
8.1	Introduction	233
8.2	Redox-Controlled Switches	234
8.2.1	Redox-Active Molecules	235
8.2.2	Hydroquinone–Quinone and OPV Switches	236
8.2.3	Tetrathiafulvalene and Molecular Cruciforms	236
8.2.4	Spin-Crossover Metal Complexes	240
8.2.5	Bipyridyl-OPE Switch	241
8.2.6	Mechanically Interlocked Molecules	242
8.3	Light-Controlled Switches	245
8.3.1	Diazobenzene	246
8.3.2	Dithienylethenes	247
8.3.3	Dihydroazulene	249

8.4	Coordination-Induced Switches	253
8.5	Tautomerization-Induced Switches	254
8.6	Concluding Remarks	255
9	Switching Mechanisms in Molecular Switches	263
	<i>Andrey Danilov and Sergey Kubatkin</i>	
9.1	Introduction	264
9.2	Switching Behavior: Stochastic or Deterministic?	265
9.3	Bianthrone Switch	267
	9.3.1 Experimental Data	267
	9.3.2 General Model for Switching	268
	9.3.3 Data Analysis	272
9.4	C ₆₀ Junction	275
	9.4.1 Experimental Data	275
	9.4.2 Switching Rates: Forward Switching	277
	9.4.3 Switching Rates: Reverse Switching	279
	9.4.4 Potential Landscape and On-Off Hysteresis	280
	9.4.5 What are the On and Off states?	282
	9.4.6 Switching by Tunneling: Approaching the Classical Limit	284
9.5	Switching Behavior of OPV3 Junction	285
	9.5.1 Experimental Data	285
	9.5.2 Data Analysis	286
	9.5.3 The On and Off States of the OPV3 Junction	290
9.6	Summary	291
10	Thermoelectricity in Molecular Junctions	299
	<i>Shubhaditya Majumdar, Won Ho Jeong, Pramod S. Reddy, and Jonathan A. Malen</i>	
10.1	Introduction	299
10.2	Electronic Conductance	304
10.3	Thermal Conductance	305
10.4	Molecular Junctions	307
	10.4.1 Thermoelectricity	309
10.5	Transmission Functions and ZT	311
	10.5.1 Electronic Transmission Functions	311
	10.5.2 Phonon Transmission Functions	314

10.5.3	Computational Studies of Thermal Transport in Molecular Junctions	316
10.5.4	ZT and Thermoelectric Efficiency	317
10.6	Experimental Techniques for Probing Transport Properties of Molecular Junctions	319
10.6.1	Formation of Metal–Molecule–Metal Junction	319
10.6.2	Scanning Tunneling Microscope Break Junction (STM-BJ) Technique	320
10.6.3	Contact Probe Atomic Force Microscope Technique	328
10.7	Experimental Techniques for Probing the Heat Dissipation and Heat Transport Properties of Single-Molecule Junctions	330
10.8	Summary	331
11	Interference Effects in Single-Molecule Transport	341
	<i>Gemma C. Solomon</i>	
11.1	Introduction	341
11.2	Why Interference?	343
11.3	Interest in Interference Effects	346
11.4	Signatures of Interference	348
11.4.1	In a Model-System Calculation	348
11.4.2	In a More Realistic Calculation	348
11.4.3	In Experimental Measurements	351
11.5	Range of Chemical Systems	355
11.5.1	Predicting Interference Effects	355
11.6	What is Interfering with What?	359
11.7	(How) Can We Use Interference Effects?	361
11.7.1	Switching	361
11.7.2	Chemical Control	363
11.8	Conclusion	364
12	Parallel Self-Assembly Strategies toward Multiple Single-Molecule Electronic Devices	371
	<i>Kasper Nørgaard and Titoo Jain</i>	
12.1	Introduction	372
12.1.1	Self-Assembly of Nanomaterials	373

12.2	Self-Assembly on Surfaces	374
12.2.1	Self-Assembly at the Air–Water Interface	377
12.3	Solution Assembly of Molecular Nanogaps	380
12.4	Conclusion	389
13	Toward Circuit Design in Single-Molecule Electronics	397
	<i>Jaap Hoekstra</i>	
13.1	Tunneling, Coulomb Blockade, and Addition Energy	398
13.2	Island Excited by an Ideal Current Source and Zero Tunneling Time	402
13.3	Island Excited by an Ideal Voltage Source and Zero Tunneling Time	404
13.4	Single-Electron Tunneling Transistor	407
13.5	Including Nonzero Tunneling Times	412
13.6	Circuit Perspectives	416
13.7	Summary	417
	<i>Index</i>	423

Preface

Since the first visionary publications about the concepts of single-molecule electronics came out about 40 years ago, the research field has evolved into a truly interdisciplinary effort attracting contributors from various disciplines such as synthetic chemistry, theoretical chemistry and physics, experimental physics, and electronic engineering. Although great progress in both experimental realizations and theoretical understanding of single-molecule devices has been made, making it possible (to some extent) to predict and design molecular electronic components with tailored properties is still a challenge and still many steps are to be taken to overcome them before we will see widespread use of computing devices based on single molecules.

The aim of this book is to introduce a new generation of scientists to the fascinating research field of single-molecule electronics. The book consists of an introduction plus 12 chapters seeking to give a balanced view of the research field as it is seen through the eyes of experts coming from different areas of research—from synthetic chemistry, through modeling to experimental approaches and systems view. Needless to say, this book could not have come about without the contributions of the authors, and I would like to take this opportunity to thank specifically Anders Bergvall, Andrey Danilov, Mikael Fogelström, Thomas Frederiksen, Tina A. Gschneidtner, Joshua Hihath, Jaap Hoekstra, Cecilia Holmqvist, Won H. Jeong, Tomas Löfwander, Titoo Jain, Sergey Kubatkin, Shubhaditya Majumdar, Jonathan A. Malen, Mogens B. Nielsen, Kasper Nørgaard, Pramod S. Reddy, Jos S. Seldenthuis, Gemma C. Solomon, Jos M. Thijssen, and Herre S. J. van der Zant. I would also like to thank Pan Stanford Publishing for this opportunity, my collaborators and co-workers at Chalmers University of Technology and abroad, and all

scientists who have and are currently contributing to bring single-molecule electronics research forward by creating a stimulating and creative world community. Finally, I would like to thank my family for their love and support.

This is the beginning!

Kasper Moth-Poulsen

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