



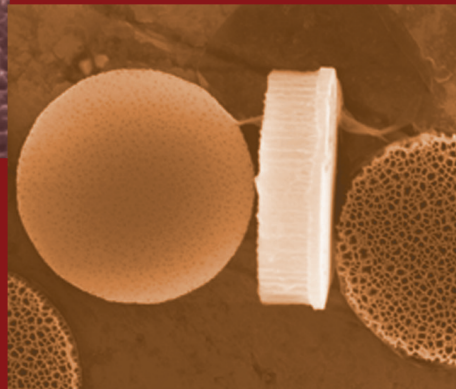
NANOTECHNOLOGY COMMERCIALIZATION FOR MANAGERS



AND
SCIENTISTS



edited by
WIM HELWEGEN
LUCA ESCOFFIER

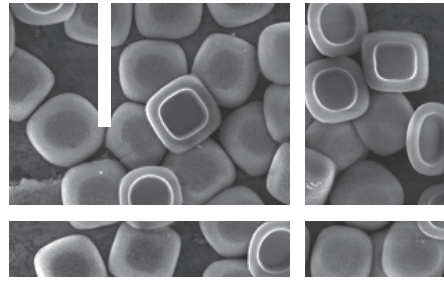


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Contents

<i>Contributors</i>	xvii
<i>Foreword</i>	xxv
<i>Preface</i>	xxvii
1 Introduction to the World of Nanotechnology	1
<i>Rachel M. Buchanan, Christine A. Smid, and Ennio Tasciotti</i>	
1.1 History and Definition	1
1.2 Fabrication and Characterization	2
1.2.1 Top-Down Nanofabrication: Photolithography and Nanolithography	3
1.2.2 Bottom-Up Nanofabrication	3
1.2.3 Electron Microscopes	4
1.2.4 Scanning Probe Microscopes	4
1.3 Current and Future Applications	5
1.3.1 Diagnostics	5
1.3.2 Nanoparticles and Implantable Devices for Targeted Delivery	8
1.3.3 Tissue Engineering and Medical Implants	12
1.3.4 Electronics	13
1.3.5 Microelectromechanical Systems	14
1.3.6 Sensors	15
1.3.7 Energy	17
1.3.8 Food Production, Processing, Preservation, and Packaging	19
1.3.9 Water Purification	19
1.3.10 Air Quality	23
1.3.11 Space	24
2 Overview of Intellectual Property Rights	33
<i>Wim Helwegen and Luca Escoffier</i>	
2.1 Patents	33

2.1.1	Requirements	34
2.1.1.1	Patentable subject matter	35
2.1.1.2	Novelty	35
2.1.1.3	Industrial application/utility	37
2.1.1.4	Inventive step/non-obviousness	37
2.1.1.5	Disclosure	38
2.1.2	Post Grant	39
2.1.3	Exempted Uses	40
2.2	Other Forms of Intellectual Property	41
2.2.1	Utility Models	41
2.2.2	Copyright	42
2.2.2.1	Economic rights, moral rights, and other features	43
2.2.3	Trademarks	43
2.2.3.1	Requirements and characteristics	44
2.2.4	Industrial Designs	45
2.3	Trade Secrets	46

3 Nanotechnology Patent Procurement and Litigation in Europe 49

Hanna R. Laurén

3.1	Obtaining Patent Protection in Europe	49
3.1.1	National Route	49
3.1.2	European Route	50
3.1.3	International Route	52
3.2	Post-Grant Proceedings for a European Patent	53
3.3	Patentability of Nanotechnology in Europe	55
3.3.1	Patentable Inventions	55
3.3.2	Novelty	56
3.3.2.1	Selection inventions	57
3.3.2.2	Size-related properties	59
3.3.2.3	Naturally occurring products	60
3.3.2.4	Case law of the boards of appeal	60
3.3.3	Inventive Step	62
3.3.3.1	Argumentation	63
3.3.3.2	Obviousness of miniaturization	64
3.3.3.3	Case law of the boards of appeal	65
3.3.4	Industrial Applicability	65

3.4	Drafting a European Patent Application	66
3.4.1	General Considerations	66
3.4.2	Sufficient Disclosure of the Invention	68
3.4.3	Claims	69
3.4.4	Terminology	71
4	Nanotechnology Patent Procurement and Litigation in the United States	75
	<i>Sarah M. Rouse</i>	
4.1	Patent Procurement for Nanotechnology-Based Inventions: US Perspective	75
4.2	The US Patent System	75
4.2.1	Patent Prosecution Overview	76
4.2.1.1	Patent application submission and examination	76
4.2.2	Types of Patent Applications	78
4.2.2.1	Non-provisional patent application	78
4.2.2.2	Provisional patent application	78
4.2.2.3	Continuation application	78
4.2.2.4	Continuation-in-part application	79
4.2.2.5	Divisional application	79
4.2.3	Pursuing a US Patent via the Patent Cooperation Treaty (PCT)	80
4.2.4	Patent Term	80
4.2.5	Conditions for Obtaining a US Patent	81
4.2.5.1	Novelty	81
4.2.5.2	Utility	82
4.2.5.3	Non-obviousness	83
4.2.5.4	Written description and enablement	84
4.2.5.5	Best mode	85
4.3	US Patent Post-Grant Proceedings	86
4.3.1	Interference	86
4.3.2	Reissue	87
4.3.2.1	Broadening reissue	88
4.3.2.2	Narrowing reissue	88
4.3.2.3	Doctrine of intervening rights	88
4.3.3	Reexamination	89
4.3.3.1	<i>Ex parte</i> reexamination	89
4.3.3.2	<i>Inter partes</i> reexamination	90

4.3.4	Statutory and Terminal Disclaimers	90
4.3.5	Certificate of Correction	91
4.4	US Patent Reform	91
4.4.1	First-Inventor-to-File	91
4.4.2	Post-Grant Review	92
4.4.3	Inter Partes Review	93
4.4.4	Patent Trial and Appeal Board	94
4.4.5	Prior User Rights Defense	94
4.4.6	False Patent Marking Suits	94
4.4.7	Elimination of Best Mode Invalidity Defense	95
4.5	Patentability of Nanotechnology in the United States	95
4.5.1	Strategic Prosecution of Nanotechnology Inventions	95
4.5.2	US Nanotechnology “Patent Thicket”	96
4.5.3	Nanotechnology Commercialization	97
4.5.4	Alternative Mechanisms for Commercialization of Nanoproductions	97
4.5.5	US Patent Infringement and Litigation	98
5	How to Set Up an Effective IP Strategy and Manage a Nanotechnology-Based Patent Portfolio	103
	<i>Pekka Valkonen</i>	
5.1	Strategy: Why It’s Ambiguous	103
5.2	Pros and Cons of Patents	105
5.3	IPR Strategies in the Literature	106
5.4	Appropriability of Patents	111
5.5	Appropriability of Patents in Nanotechnology	113
5.6	IPR Policy: Implementing Strategy from the Bottom Up	116
5.7	IPR Policy: Some Practical Measures	120
5.7.1	Implementing IPR Policy by Learning	120
5.7.2	Patenting in View of Porter’s Five Forces	121
5.7.3	Evaluation of Patent Portfolio	123
5.8	Summary	124
6	How to Identify Patent Infringements in the Nanotechnology Sector	131
	<i>Marco Spadaro</i>	
6.1	Introduction	131

6.2	The Laws	132
6.3	The United States of America and Europe	134
6.4	Exclusive Rights and Infringement	135
6.5	The Product and the Claims	136
6.6	Recognizing Infringement	137
6.7	Infringing Nanotechnology	139
6.8	Determining Infringement in Nanotechnology	149
6.8.1	How to State to the Alleged Infringer	149
6.8.2	How to Explain It to the Experts and the Judges	150
6.8.3	What the Law Tells Us	150
6.9	Am I (Patent Owner) an Infringer?	150
6.10	Different Kinds of Infringement	152
6.11	Court Decision: United States of America (<i>Kumar</i>)	153
6.12	Court Decision: Europe (Germany)	154
6.13	Specific Problems in Nanotechnology	157
6.14	Conclusion	157
7	Licensing Issues in Nanotechnology	159
	<i>Joanna T. Brougher</i>	
7.1	Introduction	159
7.2	Reasons for Entering into License Agreements	160
7.3	Overview of Intellectual Property Licensing	161
7.3.1	A License: Transferring Less than the Entire Ownership Interest	162
7.3.2	An Assignment: Transferring the Entire Ownership Interest	163
7.4	Best Practices When Entering into A License Agreement	163
7.4.1	Non-Disclosure Agreements to Protect Confidential Information	164
7.4.2	Due Diligence to Uncover Potential Issues	165
7.4.3	Properly Define the Scope of the Agreement	165
7.5	Potential Issues in Nanotechnology Licensing	166
7.5.1	Protecting IP Rights Under Trade Secret Law	166
7.5.2	Ownership and Control of the Licensed Intellectual Property	168
7.5.2.1	University ownership	169
7.5.2.2	Government march-in rights	170

7.5.3	Unknown and Unforeseen Side Effects	172
7.5.4	Crowded Technology Space and Cross-Licensing Strategies	173
7.5.5	Policing and Enforcing Patent Rights	175
7.6	International Issues Surrounding Nanotechnology Licensing	177
7.6.1	Different Patent Laws for Different Countries	178
7.6.2	Export Control Laws	180
7.6.3	Choice of Law Provision to Govern the International Licensing Agreement	181
7.7	Conclusion	182

8 IP Valuation: Principles and Applications in the Nanotechnology Industry 185

Efrat Kasznik

8.1	Overview of IP Valuation	185
8.1.1	What Is Intellectual Property (IP) Valuation?	185
8.1.1.1	Brief history of IP valuation in the United States	185
8.1.1.2	IP valuation standards in the United States	188
8.1.1.3	IP valuation circumstances in Europe	194
8.2	The Application of IP Valuation in the Nanotechnology Industry	195
8.2.1	Nanotechnology IP Landscape and Technology Development	195
8.2.1.1	Patent landscape overview in the United States	195
8.2.1.2	State of nanotechnology development around the world	197
8.2.2	Managing an IP Portfolio in the Nanotechnology Industry	198
8.2.2.1	IP portfolio challenges in nanotechnology	198
8.2.2.2	Patenting along the value chain	198
8.2.2.3	Technology transfer from university to industry	199
8.2.2.4	Mitigating litigation risk	200

8.2.3	IP Valuation Case Studies	201
8.2.3.1	Advanced thermoelectric technology	201
8.2.3.2	Nanocomposite plastic technology	202
9	Investing in Nanotechnology	205
	<i>Po Chi Wu</i>	
9.1	The Nanotech Challenge	205
9.2	How Investors Think About Nanotechnology	208
9.3	Current State of Investment in Nanotechnology	215
9.4	The Venture Biosphere	218
9.4.1	What Is the Venture Biosphere?	219
9.4.2	What Makes the Silicon Valley Ecosystem Work So Well?	223
9.5	Fundamentals of The Venture Capital Process: Advice to Entrepreneurs	229
9.5.1	What Does a VC Really Look for When Reviewing a Business Plan?	229
9.5.1.1	VC's first key issues (instant "decline to invest") – "weakest links in the story"	229
9.5.2	Reasons for Failure	229
9.5.2.1	Success mode	230
9.5.3	Practical Considerations: What to Do about your Plan (Teamwork Is Required, with Leadership)	231
9.6	How to Raise Money from Venture Capital Firms	231
10	Technology Transfer and Nanomedicine with Special Reference to Sweden	237
	<i>Claes Post</i>	
10.1	Introduction	237
10.2	Technology Transfer	240
10.2.1	Definitions	240
10.2.2	TTO Networks and Guidelines	241
10.2.3	Deal Sourcing	244
10.2.4	Swedish Context	245
10.2.4.1	Tech transfer processes: a linköping University case study	248

10.3	Nanomedicine	254
10.3.1	Regulatory Aspects	255
10.4	Nanotech Case Studies	256
10.4.1	Biacore	257
10.4.2	SPAGO Imaging	258
10.4.3	Artificial Corneas	259
10.5	Conclusion	260
11	Public-Private Partnerships — an Example from the Netherlands: The Industrial Partnership Programme	263
	<i>Pieter de Witte</i>	
11.1	Introduction	263
11.1.1	General Introduction	263
11.1.2	Public-Private Partnerships in Research	264
11.1.3	Foundation FOM	265
11.1.4	The Industrial Partnership Programme (IPP)	266
11.1.5	The Advent of Open Innovation and the Rise of the IPP	268
11.1.6	Summary	269
11.2	Description of the Industrial Partnership Programme	269
11.2.1	Introduction	269
11.2.2	Characteristics of the Programme	270
11.2.3	Forms of IPP: Open, Closed, or FOM Group at Company Laboratory	270
11.2.4	The Start-Up Phase of an IPP	271
11.2.4.1	The embryonic stage of a potential new IPP	271
11.2.4.2	Application and review procedure	272
11.2.4.3	Success rate of IPP applications	272
11.2.4.4	The collaboration agreement	273
11.2.5	The Execution Phase of an IPP	274
11.2.5.1	Organization and management	274
11.2.5.2	Governance	275
11.2.5.3	Financial aspects	275
11.2.6	Summary	275

11.3	Experiences and Results	276
11.3.1	Success Comes in Different Shapes and Sizes	276
11.3.2	The Network	279
11.3.3	Knowledge Transfer	281
11.3.4	IPR	282
11.3.5	Experiences from Industrial Partners	283
11.3.6	Experiences from Academics	284
11.3.7	Summary	285
11.4	Conclusions and Outlook	286
11.4.1	Conclusions	286
11.4.2	Outlook	288
12	University and Employees' Inventions in Europe and the United States	291
	<i>Niklas Bruun and Michael B. Landau</i>	
12.1	Employee Inventions in Europe	291
12.1.1	European Traditions for University Inventions	292
12.1.2	A Changing Role of Universities Leading to Increased University Ownership	293
12.1.3	Outline	294
12.2	University Ownership as a General Rule	295
12.2.1	Ownership Regulated by Labor Law	295
12.2.1.1	Germany	295
12.2.1.2	Norway	296
12.2.2	Ownership is Regulated by Patent (or Intellectual Property)	297
12.2.2.1	United Kingdom	297
12.2.2.2	The Netherlands	299
12.3	Researcher Ownership Through "Professor's Privilege"	300
12.3.1	Italy	300
12.3.2	Sweden	300
12.4	Hybrid Systems: Ownership Regulated and Balanced Through Special Legislation	301
12.4.1	Denmark	301
12.4.1.1	Finland	302

12.4.2	Comments	303
12.5	Discussion	303
12.5.1	Overview	303
12.5.1.1	Inventions subject to the legislation	304
12.5.1.2	The tension between publication and secrecy	304
12.5.1.3	The definitions of inventions belonging to the employer	304
12.5.2	Implications for Nanotechnology	305
12.6	The US Perspective	306
12.6.1	University Inventions in the United States	306
12.6.1.1	Copyrights	306
12.6.1.2	Trademarks	308
12.6.1.3	Patents	309
12.7	University Ownership is the General Rule in the United States As Well	310
12.7.1	Duty to Disclose and University Ownership	310
12.7.2	Co-Inventorship	316
12.7.3	Universities and Payment of Faculty Inventors	317
12.7.3.1	Cornell University	317
12.7.3.2	University of Michigan	318
12.7.3.3	Yale University	318
12.7.3.4	Emory University	319
12.8	Experimental use in the United States	319
12.8.1	The Experimental use Exception: What Is Left of It	319
12.9	Government Ownership of Inventions in the United States	321
12.9.1	The Bayh-Dole Act	321
12.10	Industry May Have a License in Certain Circumstances	323
12.10.1	The “Shop Right”	323
12.11	Conclusion	324
12.12	Nanotechnology: Some Final Reflections	324

13 Environment, Health, and Safety Within the Nanotechnology Industry	339
<i>Kaarle Hämeri</i>	
13.1 Introduction	339
13.2 Exposure to Nanoparticles	342
13.2.1 Exposure Scenarios	343
13.2.2 Exposure Metrics	344
13.2.3 Exposure due to Release to the Environment	344
13.3 Environmental Fate	345
13.3.1 Nanomaterials in Air	345
13.4 Health Effects and Human Toxicity	347
13.5 Risk Assessment	349
13.6 Regulatory Issues	350
13.6.1 Future Perspective	351
13.7 Standardization Activities	352
 14 Regulation of Nanomaterials in the EU	 355
<i>Bärbel R. Dorbeck-Jung</i>	
14.1 Introduction	355
14.2 Regulatory Structure and Policy	356
14.3 Overview of Hard and Soft Regulation	359
14.3.1 Hard Regulation (Legislation)	360
14.3.2 Soft Regulation	361
14.4 Cross-Cutting Regulatory Issues	363
14.4.1 Definition of Nanomaterials	363
14.4.2 New Chemicals Regulation (REACH)	365
14.5 Regulation of Nanoproductions in Specific Areas	366
14.5.1 Nanomaterials in Medical Products	366
14.5.2 Nanomaterials in Cosmetic Products	369
14.5.3 Nanomaterials in Food Products	370
14.6 Conclusion	371
 15 Nanomaterial Regulation in the United States	 373
<i>Michael E. Heintz</i>	
15.1 Nanomaterial Regulation in the United States	373
15.2 Federal Regulation of Nanomaterials	374

15.2.1	Environmental Regulation of Nanomaterials	377
15.2.1.1	Nanomaterials stewardship program	379
15.2.1.2	Carbon nanotube (CNT) regulations	380
15.2.1.3	Significant new use rule (SNUR)	381
15.2.2	Worker Safety and Nanomaterials	382
15.2.2.1	Nanotechnology and the occupational health and safety administration	382
15.2.2.2	National Institute for occupational safety and health	384
15.2.3	Food and Drug Regulation of Nanomaterials	387
15.3	Insurance Concerns with Nanomaterials	389
15.4	State and Local Regulation of Nanomaterials	392
15.5	Conclusion	395
	<i>Index</i>	405

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Pieter de Witte obtained his PhD in supramolecular chemistry from Radboud University in Nijmegen in 2004, after which he became a postdoctoral researcher at ISIS institute of Strasbourg University, France. From 2004 to 2008 he was program officer for the Dutch national nanotechnology program NanoNed, at Technology Foundation STW, where he coordinated the utilization program and the interactions between industrial users and academic research programs. Since 2008, Dr. de Witte has been working at FOM Foundation and is responsible for collaborations with industry, in particular the coordination of the Industrial Partnership Programme (IPP).

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Foreword

Nanotechnology holds great promise for the future of humankind, and scientists and managers should be aware of this. Public and private sector investments in nanotech research have increased exponentially in the past two decades. We are now facing a future, not too far beyond the present, in which materials and devices with astonishing properties will completely change the rules of the game. Novel products will possess features that were almost unimaginable just a few years ago.

Until recently, universities and research centers around the world had been the prime actors in this developing revolution because nanotechnology research requires the skills of interdisciplinary teams that are most readily found in academia. What we are seeing today is a paradigm shift into the entrepreneurial arena. More and more pure researchers are getting involved in spinoff ventures that spring from the academic setting, and there is a need for interdisciplinary knowledge that combines scientific and managerial skills. At the same time, managers who expect to become involved in near-term nanotechnology enterprises require basic knowledge of the wide range of current applications in this fascinating field.

This book is a valuable attempt to satisfy these objectives. Authors with diverse backgrounds offer insight and useful advice both to scientists who may be seeking to capitalize their nanotech research through the creation of a new venture and to managers who need to know how and why this unique technology domain is regulated. The book focuses strongly on the creation and monetization of the intellectual property related to nanotechnology inventions, starting from the conception of the patentable idea and progressing through the venture capital stage

and also nanotechnology regulation. The full pipeline of present-day nanotechnology is examined through the expert eyes of patent attorneys, professors, regulation experts, managers, and scientists, with helpful comparisons of IP issues in the United States and Europe.

I have found this volume to be very useful in my own work. Anyone who is interested in starting a nanotechnology-based venture or who wishes to understand how to manage one should read this book to become more aware of the opportunities and challenges that nanotechnology will bring into our lives.

Robert A. Freitas Jr.

Preface

Nanotechnology will have a large impact on our future, but a lot of research and development (R&D) projects have yet to be conducted. This R&D will require extraordinary efforts from individuals and groups in universities, research institutes, and the industry. Unfortunately, scientific genius does not always equal commercial success. In order to benefit commercially from one's research, or even to prevent others from obstructing research, a myriad of factors need to be taken into account. Many of those, for example, environment, health and safety regulations, academy-industry cooperation, intellectual property, and attracting investments, come into play well before and during the research process. This book intends to provide the reader with the basics of the most relevant factors that need to be taken into account before, during, and after the R&D phase. Although some of the subjects discussed are highly complicated, the authors have written the chapters in a way that makes them understandable for professionals who are not familiar with the topic at hand.

The nanoscale brings many challenges to scientists who deal with it. Some of its unique characteristics also pose challenges in the process of commercialization. This book discusses these nano-specific challenges. While most chapters and parts of chapters are nano-specific, others are of a more general nature, either because a more general discussion is needed in order to understand the nano-specific part or because, despite not being nano-specific, they are essential in the commercialization process.

To provide our readers with the best possible information, we relied upon the expertise of a great and diverse team of authors: Joanna Brougher, Niklas Bruun, Rachel Buchanan, Bärbel Dorbeck-Jung, Michael Heintz, Kaarle Hämeri, Efrat Kasznik, Michael Landau,

Hanna Laurén, Claes Post, Sarah Rouse, Christine Smid, Marco Spadaro, Ennio Tasciotti, Pekka Valkonen, Pieter de Witte, and Po Chi Wu. We wish to extend our deepest gratitude to them for sharing their expertise and for their commitment and diligence during the entire process.

We are also very grateful to Stanford Chong, the publisher of this work, and to his editorial team for having made the realization of a book with so many authors a smooth and enjoyable experience.

Wim Helwegen and Luca Escoffier

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