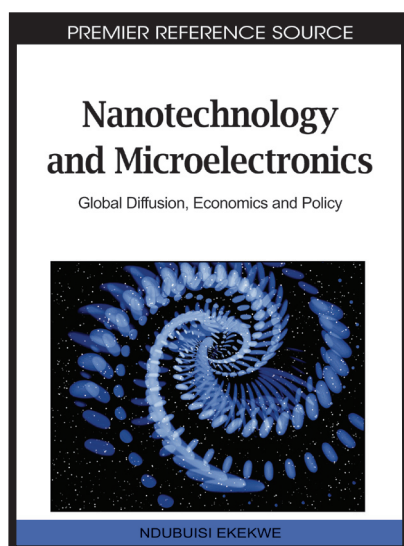


New Release

May 2010

## Nanotechnology and Microelectronics: Global Diffusion, Economics and Policy



**Edited by: Ndubuisi Ekekwe,  
Johns Hopkins University, USA**

13-digit ISBN: 978-1-61692-006-7  
2010 Copyright

Price: US \$180.00 (hardcover)

Perpetual Access: US \$255.00

Print + Perpetual Access: US \$360

Illustrations: figures, tables (8 1/2" x 11")

Translation Rights: World

**“The world is one; there are challenges that we tackle more efficiently and effectively together. For this, we need to create a common and level playing field and share fundamental knowledge and best practices. This book will surely help.”**

**- Renzo Tomellini**

Modern technology has positioned us in the midst of a new revolution. Together, nanotechnology and microelectronics are the engines of modern commerce, and are directly or indirectly enabling numerous innovative global changes. Whenever there is advancement in their performances, a dawn emerges in the global economy bringing improvements in all areas of human endeavors.

**Nanotechnology and Microelectronics: Global Diffusion, Economics and Policy** provides comprehensive research and case studies on the issues surrounding technology transfer and diffusion, trends and developments, and economics and policies as they relate to these technologies. This book serves as a resource for academics, students, policy-makers and professionals interested in advancing their knowledge of nanotechnology and microelectronics.

### Subject:

Intelligent Technologies, Artificial Intelligence, Nanotechnology

### Market:

This essential publication will be invaluable to academic and research libraries as well as academics, students, policy-makers and professionals in the field of technology economics.

Excellent addition to your library! Recommend to your acquisitions librarian.

[www.igi-global.com](http://www.igi-global.com)

# Nanotechnology and Microelectronics: Global Diffusion, Economics and Policy

Edited by: Ndubuisi Ekekwe, Johns Hopkins University, USA

## Table of Contents

### Section 1: Foundations and Science

*Chapter 1: Nanotechnology and Microelectronics: The Science, Trends and Global Diffusion*

Ndubuisi Ekekwe, Johns Hopkins University, USA

*Chapter 2: Molecular Manufacturing: Nano Building Nano*

Chris Phoenix, Center for Responsible Nanotechnology, USA

### Section 2: Technology Transfer and Innovation

*Chapter 3: Trends in Nanotechnology Knowledge Creation and Dissemination*

Nazrul Islam, Cardiff University, UK

*Chapter 4: Collaborations in the Open Innovation Era*

Annamária Inzelt, Financial Research Ltd, Hungary

*Chapter 5: Towards the Sixth Kondratieff Cycle of Nano Revolution*

Jarunee Wonglimpiyarat, Thammasat University, Thailand

*Chapter 6: Technology Resilience and Diffusion: Capability Formation Dilemma in Non-Agile Economies*

Yves Ekoué Amaizo, Afrology Think Tank, Austria

*Chapter 7: Adopter Fatigue Phenomenon in Diffusion of Innovations*

Augustine O. Ejiogu, Imo State University, Nigeria

### Section 3: Industry, Policy and Experiences

*Chapter 8: Nanotechnology, Firm Innovation and University-Industry Networks: The Case of the UWS Nanotechnology Network in Sydney*

Cristina Martínez-Fernandez, University of Western Sydney, Australia

*Chapter 9: Licensing in the Theory of Cooperative R&D*

Arijit Mukherjee, University of Nottingham, UK

*Chapter 10: Entry Barriers to the Nanotechnology Industry in Turkey*

Neslihan Aydoğan-Duda, İzmir Economics University, Turkey

İrge Şener, Çankaya University, Turkey

*Chapter 11: Micro and Nanotechnology Maturity and Performance Assessment*

Nazrul Islam, Cardiff University, UK

### Section 4: Ethics, Regulation and Environment

*Chapter 12: Diffusion of the Clean Development Mechanism*

Shaikh M Rahman, Texas Tech University, USA

Ariel Dinar, University of California, USA

Donald F. Larson, World Bank, USA

*Chapter 13: Challenges to Intellectual Property Rights from Information and Communication Technologies, Nanotechnologies and Microelectronics*

Ahmed Driouchi, Al Akhawayn University, Morocco

Molk Kadiri, Al Akhawayn University, Morocco

*Chapter 14: Taking the Lead – How the Global South Could Benefit from Climate Finance, Technology Transfer, and from Adopting Stringent Climate Policies*

Adrian Muller, University of Zürich, Switzerland

Adrian Muller, University of Zürich, Switzerland

*Chapter 15: Emissions Distribution in Post-Kyoto International Negotiations: A Policy Perspective*

Nicola Cantore, Overseas Development Institute, UK

Emilio Padilla, Univ. Autónoma de Barcelona, Spain

*Chapter 16: Potential Ethical Concerns in Nanotechnology*

Chi Anyansi- Archibong, North Carolina A&T State University, USA

Silvanus J. Udoka, North Carolina A&T State University, USA

### Section 5: Lessons from Agricultural Technology

*Chapter 17: Technological Change and the Transformation of Global Agriculture: From Biotechnology and Gene Revolution to Nano Revolution?*

Alejandro Nin-Pratt, International Food Policy Research Institute, USA

*Chapter 18: Technology Adoption and Economic Development: Trajectories within the African Agricultural Industry*

Taiwo E. Mafimisebi, Federal University of Technology, Nigeria

*Chapter 19: Technology Development and Transfer: Lessons from Agriculture*

Saikou E. Sanyang, National Pingtung University of Science and Technology, Taiwan

*Chapter 20: Technology Transfer and Diffusion in Developing Economies: Perspectives from Agricultural Technology*

Edwin M. Igbokwe, University of Nigeria, Nigeria

Nicholas Ozor, University of Nigeria, Nigeria

### Section 6: Regional Developments

*Chapter 21: Nanoscience and Nanotechnology in Latin America*

Adolfo Nemirovsky, LatIPnet Inc., USA

Fernando Audebert, University of Buenos Aires, Argentina

Oswaldo N. Oliveira Jr., USP, Brazil

Carlos J. L. Constantino, UNESP, Brazil

Lorena Barrientos, Universidad Metropolitana de Ciencias de la Educación, Chile

Guillermo González, Universidad de Chile, Chile

Elder de la Rosa, Centro de Investigaciones en Óptica, México

*Chapter 22: Technological Innovations and Africa's quest for Development in the 21st Century*

Evans S.C Osabuohien, Covenant University, Nigeria

*Chapter 23: Emerging Technology Transfer, Economic Development and Policy in Africa*

*1: Thoughts on Nanotechnology Transfer in Africa*

Alfred Kisubi, University of Wisconsin, USA

*2: Sustainable Development in Africa: Technology Transfer and Management*

*Challenges*

Chi Anyansi-Archibong, North Carolina A&T State University, USA

*3: Factors for Nanotechnology and Microelectronics Transfer to Africa*

Ngozi C. Kamalu, Fayetteville State University, USA

Johnson A. Kamalu, Alabama A&M University, USA

*4: Recent Policies in Science and Technology Development in Africa: The Case of STEP-B, Nigeria*

Michael U. Adikwu, World Bank-Step-B Project and University of Nigeria, Nigeria

*Chapter 24: Trade Policies and Development of Technology in Africa*

Louis O. Osuji, Chicago State University, USA

*Chapter 25: Emerging Technology Penetration: The case of Solar Electricity in Nigeria*

Jesuleye O. Aquila, National Centre for Technology Management, Nigeria

Siyanbola W. Owolabi, National Centre for Technology Management, Nigeria

Ilori M. Olugbemiga, Obafemi Awolowo University, Nigeria

## About the Editor:

**Ndubuisi Ekekwe** holds two doctoral and four master's degrees, including a PhD in electrical and computer engineering from the Johns Hopkins University, Baltimore and MBA from University of Calabar, Nigeria. During this MBA and Doctor of Management program, he specialized on Technology Management and Competitiveness. He founded Ultinet Systems - telephony and IT firm- and later joined Diamond Bank, Lagos where he last held the title of Banking Executive. He is the founder of the US based non-profit African Institution of Technology. Author of two books on microelectronics and electrochemistry, he co-invented a microchip used in robotics. He has organized more than thirty five seminars and workshops on technology design, innovation and diffusion across the world. Dr Ekekwe currently works in the US semiconductor industry. Well published, featured in Marquis Who's Who in America (2010 ed), and an invitee to major meetings like World Economic Forum and African Union congress, he has lectured (adjunct) in three African universities. He served in the United States National Science Foundation ERC/CISST E&D committee for four years. A TED fellow, he graduated top of his class with BEng in electrical and electronics engineering (Aug. 1998) from Federal University of Technology, Owerri, Nigeria.

**Excellent addition to your library! Recommend to your acquisitions librarian.**

[www.igi-global.com](http://www.igi-global.com)