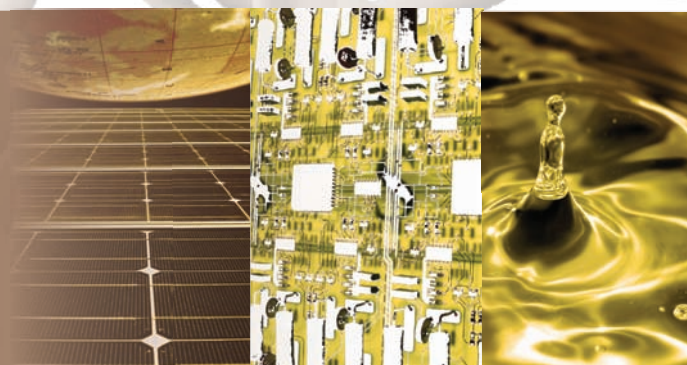


OECD Conference on Potential Environmental Benefits of Nanotechnology: Fostering Safe Innovation-Led Growth

15-17 July 2009,
OECD Conference Centre, Paris - France



Conference Programme



ORGANISATION FOR ECONOMIC
CO-OPERATION AND DEVELOPMENT

CONFERENCE PROGRAMME

Wednesday 15 July 2009

9:30-10:00	Opening Session Welcome Introduction from the Steering Committee Opening remarks
10:00-13:00	Plenary Session One: <i>Setting the Scene</i>
13:00-14:30	Lunch Break
14:30-18:00	Plenary Session Two: <i>Life Cycle Perspectives</i>
18:00	Reception

Thursday 16 July 2009

09:00-13:00	Parallel Sessions		
	1. <i>Water Treatment and Purification</i>		2. <i>Environmental Sensing</i>
13:00-14:30	Lunch Break		
14:30-18:00	Parallel Sessions		
	3. <i>Clean Car Technology</i>	4. <i>Cellulose Nano Fibres</i>	5. <i>Site Remediation</i>

Friday 17 July 2009

09:00-13:00	Parallel Sessions		
	6. <i>Better Batteries Enabled by Nanoscale Innovation</i>	7. <i>Agricultural Nanotechnology</i>	8. <i>Greener Nanoproducts</i>
13:00-14:30	Lunch Break		
14:30-18:00	Final Plenary Session		
	14:30 - 16:00 Reports from parallel sessions 17:00 - 17:50 Final discussion and conclusions 17:50 - 18:00 Closing remarks		

Wednesday 15 July 2009

Opening Session

9:30 - 10:00

Welcome: Mario Amano (Deputy Secretary-General of the OECD)

Introduction from the Steering Committee

Opening remarks: Jean-Philippe Bourgoin (Director of Nanoscience Programme, Atomic Energy Commission -CEA, France)

Plenary Session One: *Setting the Scene*

10:00 - 13:00

This plenary session will introduce the conference themes, objectives and expected outputs. The session will provide an overview of the technologies to be discussed, illustrations of their potential environmental benefits, examples of challenges which are impacting or may impact upon the development and application of these technologies and some indications of policy measures being used to address those challenges.

Introduction

Moderator: Iain Gillespie (Science and Technology Policy Division, OECD)

Keynote speech: Barriers and opportunities in the delivery of sustainable solutions – Lessons from the field

Speaker: Edward W. Manning (Tourisk Inc. and Carleton University, Canada)

Benefit and safety aspects of nanotechnologies – From the viewpoint of carbon nanotubes

Speaker: Morinobu Endo (Shinshu University, Japan)

Are we willing to heed the lessons of the past? – Using the precautionary principle to foster safe innovation-led growth

Speaker: Steve Mullins (ACTU, Australia)

Converging technologies, diverging regulation

Speaker: Geert van Calster (Katholieke Universiteit Leuven, Belgium)

Questions and Answers

Lunch Break

13:00 - 14:30

Wednesday 15 July 2009

Plenary Session Two: Life Cycle Perspectives

14:30 - 18:00

To present and discuss key organising concepts as a framework for identifying and considering potential environmental impacts and how they may affect potential societal benefits from nanotechnology. To develop a full appreciation of societal benefits of nanotechnology, it is important to understand both the potential benefits and the potential impacts of nanomaterials.

The need for a balanced approach to nanotechnology development

Speaker: Caroline Baier-Anderson (EDF, United States)

Ways to measure and realise environmental benefits with nanomaterials

Speaker: Arnim von Gleich (University of Bremen, Germany)

Greener nanoscience – A proactive approach to advancing applications and reducing implications of nanotechnology throughout the life cycle

Speaker: James Hutchison (University of Oregon, United States)

Putting ‘benefits’ into context – Can life-cycle thinking really provide for inclusive and precautionary decision-making on the use of nanotechnology?

Speaker: David Santillo (Greenpeace, United Kingdom)

The innovation alliance CNT - A novel public-private partnership model for the responsible development of sustainable CNT related technologies and applications

Speaker: Péter Krüger (Bayer, Germany)

Policy considerations for an integrated policy framework

Speaker: Lynn Bergeson (Bergeson & Campbell, P.C., United States)

Nanotechnology in the environment – Design and exposure

Speaker: Vicki Colvin (Rice University, United States)

Panel discussion

Reception

18:00

Thursday 16 July 9:00 - Friday 17 July 13:00

Parallel Sessions

Each parallel session will have workshops covering the three technology themes (pollution reduction, cleaner production, and other environmental benefits) and addressing the following issues: i) State-of-art technology; ii) Potential environmental benefits; iii) Challenges for implementation; and iv) Policy considerations.

Each workshop will finish with Q&A and discussion. Key findings from the workshop will be presented during the final plenary session.

Session 1. Water Treatment and Purification

9:00 - 13:00

Conventional remediation techniques prove relatively ineffective in reducing the levels of pollutants in water but the use of nanostructured materials can significantly improve efficiency. The speakers will compare photocatalysis and nanofiltration as emerging technologies for the purification and treatment of water.

Affordable clean water using nanotechnology

Speaker: T. Pradeep (Indian Institute of Technology Madras, India)

Photocatalytic wastewater treatment

Speaker: Ralf Dillert (Leibniz Universität Hannover, Germany)

Solar photocatalytic processes for water disinfection

Speaker: Pilar Fernández Ibáñez (CIEMAT, Spain)

Enhancement of photocatalytic degradation by modification of titania

Speaker: Alexander Orlov (State University of New York, United States)

Photocatalysis for drinking water purification

Speaker: Patrick Dunlop (University of Ulster, United Kingdom)

Capacitive deionisation using novel nanoporous materials as a competitive process for the desalination of sea and brackish waters

Speaker: Marc Anderson (University of Wisconsin, United States)

Nanofiltration and adsorption for water treatment – the need of nanotechnologies

Speaker: Armand Masion (CNRS, France)

Panel discussion

Thursday 16 July 2009

Session 2. Environmental Sensing

09:00 - 13:00

Nanotechnology can enable the development of environmental sensing devices and greatly enhance the deployment of their networks that will result in an holistic assessment of the environment and in improved environmental protection.

Recent advances in microfluidic device applications for environmental monitoring and ecotoxicological assessments

Speaker: Tae-Hyun Yoon (Hanyang University, Korea)

New methods to measure environmental exposure in real time

Speaker: Hans Jürgen Grimm (Grimm Aerosol, Germany)

Chemical and biochemical sensing with silicon nanostructures

Speaker: Michael J. Sailor (University of California - San Diego, United States)

Sensors as tools for quantitation and cytotoxicity studies of engineered nanomaterials

Speaker: Omowunmi Sadik (State University of New York-Binghamton, United States)

Nanomaterial based environmental sensing

Speaker: Sung Ik Yang (Kyung Hee University, Korea)

Crystalline nanowires of semiconducting metal oxides as a new generation of gas sensors

Speaker: Alberto Vomiero (CNR, Italy)

Exposure and dose relationships of particulate matter in the environment

Speaker: Robert Muir (Naneum Ltd, United Kingdom)

Micro- and nanotechnology enabled platforms for environmental monitoring

Speaker: Ashwin Seshia (Cambridge University, United Kingdom)

Panel discussion

13:00 - 14:30 Lunch Break

Thursday 16 July 2009

Session 3. Clean Car Technology

14:30 - 18:00

Developing advanced catalysts, electro-chemical reactors and other technologies for successful car emission control and for new types of power modules is one of the most anticipated applications of nanotechnology. Each speaker will cover this application from a different methodological perspective and examine policy implications.

Novel catalytic technologies for car emission reduction

Speaker: Hideaki Hamada (National Institute of Advanced Industrial Science and Technology, Japan)

Nanostructured electrochemical reactors for NO decomposition

Speaker: Sergey Bredikhin (Institute of Solid State Physics Russian Academy of Science, Russia)

Nanostructured electrochemical reactors for NO_x/PM decomposition and Micro SOFCs

Speaker: Masanobu Awano (National Institute of Advanced Industrial Science and Technology, Japan)

Ceramic nanotechnology for green transportation

Speaker: Michael Stelter (Fraunhofer Institute for Ceramic Technologies and Systems Dresden, Germany)

Improvement of PEM fuel cells for car application – From stack characterisation to tailored electrodes nanostructured materials

Speaker: Patrick Achard (MINES-ParisTech, France)

Panel discussion

Thursday 16 July 2009

Session 4. Cellulose Nano Fibres

14:30 - 18:00

Design, manufacturing and environmental issues of manufactured nanocrystalline cellulose: A research, commercialisation and risk assessment overview.

Introduction

Speaker: Mohini Sain (University of Toronto, Canada)

Bacterial cellulose as a building block for novel materials

Speaker: Alexander Bismarck (Imperial College London, United Kingdom)

Overview of cellulose nanocrystals and nanofibres: The science and technology – A European perspective

Speaker: Denilson Da Silva Perez (FCBA, France)

Global overview of bio-nano composite technology

Speaker: Mohini Sain (University of Toronto, Canada)

Ensuring the safety of manufactured nanocrystalline cellulose – A risk assessment under Canada's new substances notification regulations

Speaker: Brian O'Connor (FPInnovations-Paprican Division, Canada)

Nanocellulose – Materials, functions and environmental aspects

Speaker: Orlando J. Rojas (North Carolina State University, United States)

Panel discussion

Thursday 16 July 2009

Session 5. Site Remediation

14:30 - 18:00

The use of nanotechnology applications for site remediation can result in faster, more cost-effective clean-ups of hazardous waste sites, including those with challenging site conditions.

Nanotechnology for site remediation

Speaker: Marti Otto (EPA, United States)

Surface-modified iron nanoparticles for remediation – synthesis, characterisation and transport

Speaker: Subhasis Ghoshal (McGill University, Canada)

Reactive nanoparticles for in situ groundwater remediation – Optimising the benefits and mitigating the risks with surface coatings

Speaker: Gregory V. Lowry (Carnegie Mellon University, United States)

Status of nZVI technology – Lessons learned from North American and international field implementations

Speaker: Jean Pierre Davit (Golder Associates-Europe, Italy)

Deployment of nZVI to soil for polychlorinated biphenyl remediation: impacts on soil microbial communities

Speaker: Liz Shaw (University of Reading, United Kingdom)

Overall research trends in nano-based water treatment technologies which have been recently applied in South Korea

Speaker: Young Haeng Lee (KIST, Korea)

Panel discussion

Friday 17 July 2009

Session 6. Better Batteries Enabled by Nanoscale Innovation

9:00 - 13:00

Improved nano-enabled batteries, especially lithium-ion types, offer the potential to enable plug-in electric vehicles and green power generation. Each speaker will cover this technology from a different perspective culminating with an examination of policies to ensure rapid and responsible development.

Nanomaterial approaches to enhance lithium ion batteries

Speaker: Brian Landi (Rochester Institute of Technology, United States)

Understanding the life-cycle environmental implications of nanotechnology in lithium-ion batteries for automobiles

Speaker: Thomas Seager (Rochester Institute of Technology, United States)

Life-cycle assessment of lithium-ion batteries for use in hybrid and electric vehicles – Understanding the policies of potential benefits and impacts

Speaker: Kathy Hart (EPA, United States)

Effects of CNTs for lithium-ion batteries as additives

Speaker: Chiaki Sotowa (Showa Denko, Japan)

Nanostructures & zero-emission advanced battery manufacturing for zero-emission electric vehicles

Speaker: Gitanjali DasGupta (Electrovaya, Canada)

End of life issues with batteries – Industrial and consumer recover and reuse/Materials management for batteries

Speaker: Shane Thompson (Kinbursky Brothers-Toxco, United States)

Panel discussion

Friday 17 July 2009

Session 7. Agricultural Nanotechnology

9:00 - 13:00

Nanotechnology has vast potential to revolutionise agriculture. This session will focus on nanotechnology applications involving nano-enabled electron transfer devices for agricultural application; nanotechnology applications in agriculture in India; nanotechnology water projects in Brazil; and more. Each speaker will address specific applications and consider the benefits, challenges, and life cycle implications posed by these enabling technologies.

Nanostructure-enhanced electron transfer devices for agricultural applications

Speaker: Guigen Zhang (Clemson University, United States)

Nanotechnology and agriculture in India – The second green revolution?

Speaker: R. Kalpana Sastry (National Academy of Agricultural Research Management, India)

Impact on nano-scale technologies on food and agriculture

Speaker: Pat Roy Mooney (ETC, Canada)

Nanosensor arrays for real-time monitoring of agricultural pollutants

Speaker: Ashok Mulchandani (University of California, United States)

Agricultural policy implications of nanotechnology

Speaker: Steve Froggett (Department of Agriculture, United States)

Nanotechnology and water purification in Brazil

Speaker: Victor Bertucci Neto (Agricultural Instrumentation Centre, Brazil)

Panel discussion

Friday 17 July 2009

Session 8. Greener Nanoproducts

9:00 - 13:00

There are several alternative ways in which nanotechnology can reduce the use of chemicals, materials and energy. Each speaker will cover different products including an examination of policies to ensure rapid and responsible development.

Quantum light™ optics for lighting

Speaker: Seth Coe-Sullivan (QD vision Inc., United States)

Self-cleaning and longer-lasting coatings

Speaker: Wendel Wohlleben (BASF SE, Germany)

Nanocoatings for energy conservation and generation

Speaker: Joe Pimenoff (Beneq, Finland)

The safe use of carbon nanotubes in coating applications

Speaker: André J. Lecloux (Nanocyl, Belgium)

Preserved, pure and precious – NanoGuard® for building and interior

Speaker: Michael Overs (Nanogate AG, Germany)

Binding particles to patience – Nanotechnology in a true context of sustainability

Speaker: Ian Illuminato (FoE, United States)

Sustainability and recycling issues

Speaker: Amin Reller (University of Augsburg, Germany)

Panel discussion

13:00 - 14:30 Lunch Break

Friday 17 June 2009

Final Plenary Session
Reports from parallel sessions 14:30 - 16:30
Rapporteurs from each sessions will present key findings focusing on: <ul style="list-style-type: none">• State-of-art technology;• Potential environmental benefits;• Challenges for implementation; and• Policy considerations A short question and answer and discussion session will follow.
Final discussion and conclusions 17:00 - 17:50
Panel discussion
Closing remarks 17:50 - 18:00

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