FRONTIERS

WHERE LIFE SCIENCES & NANOTECHNOLOGY MEET

FRONTIERS

Where Life Sciences & Nanotechnology Meet

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FRONTIERS – Partners

MESA+ Institute for Nanotechnology (NL)
University of Aarhus, iNANO (DK)
University of Cambridge, IRC (UK)
IMEC (BE)
Forschungszentrum Karlsruhe (DE)
CeNTech (DE)
Chalmers (SE)
NCCR, Basel (CH)
MPI-Solid State Research (DE)
CEMES/CNRS (FR)
WWU Münster (DE)

FRONTIERS - History

Start date August 1st, 2004

1st Period: Start up of integration activities

2nd Period: Bottom-up structure for research

3rd Period: Integration visible; limits become clear

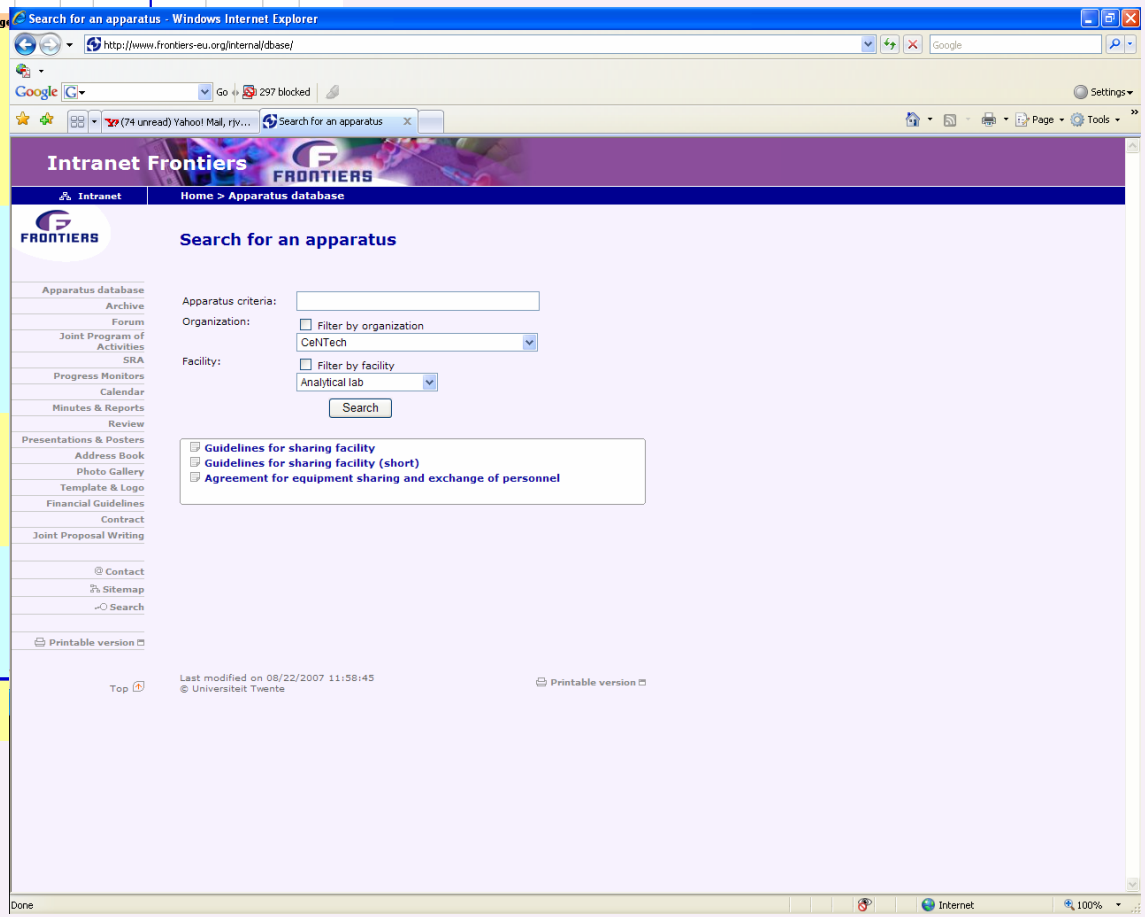
4th Period: Lasting integration; outcomes visible

FRONTIERS – Workpackages

1 Virtual Lab	Carmen Bartic	(IMEC)
2 Research	Rolf Vermeij	(MESA+)
3 Joint Curriculum	Per Lundgren	(Chalmers)
4 Science-to-Industry	Holger Winter	(CeNTech)
5 Ethics	Robert Doubleday	(Cambridge)
	Douglas Robinson	(MESA+)
6 External Communication	Monique Snippers	(MESA+)
7 Management & Organization	Rolf Vermeij	(MESA+)
8 Gender	Natalie Plank	(Cambridge)

FRONTIERS – Virtual lab

Category	Expertise in FRONTIERS	Weight	MESA+	Aarhus	Cambridge
Synthesis					
	Nanoparticles	5	1	1	
	Colloids	1	1		
	Polymers	6	1	1	1
	C-Nanotubes	3			
	Protein	6	1	1	1
	Nucleic acids	3		1	
	Polyaromatic hydrocarbons	2			
	Mixed valence complexes	3	1		
	Molecular switches	2	1		
	Molecular wires	3	1		
	Molecular motors & rotors	1	1		
Nanostructuring					
	Top-down microfabrication	6	1		
	E-beam lithography	6	1		1
	Alternative lithography (e.g. soft, capillary, etc)	3	1		
	Micro-contact printing	5	1		1
	Surface modifications using SAMs	6	1	1	1
	Spotting, local functionalization	1	1		
	Nano-stencilling techniques	3	1		
	Ion beam techniques	5	1		1
	Plastic structuring (e.g. molding, embosing, etc)	3	1		
	Glass structuring	2	1		
	Nanopores fabrication (synthetic or protein)	3	1		
	Molecular combing	2			1
	Electrochem. Deposition	4	1		
Biomaterials					
	Synthetic and biological membranes	3	1		
	Biomolecules immobilization	5	1		
	Biocompatibility	4	1	1	
	Biofouling	2	1		
	Impant materials	4	1	1	
	Biostability	1	1		
	Scafolding	3	1	1	
	Patterning	1			
Cells/Tissues					
	Cell/tissue culture	6	1	1	
	Cell biology	2		1	
	Cell attachment/spreading	4		1	
	Cell communication	1			
	Signal molecules	3		1	
	Tissue engineering	2	1	1	
	Molecular interactions	4	1		
	In vitro model systems	3		1	
Characterisation techniques					
	Optical techniques	9	1		
	Electron microscopy	8	1		1
	Probe microscopy	11	1	1	1



FRONTIERS – Research

Initial Cluster structure developed into bottom-up Strategic Research Areas:

Drug Delivery

Biointerfaces and Biocompatibility

Nanopores and Nanochannels

Molecular Machines and Switches

Biosensors

Imaging and Analytical Techniques

Nanostructured surfaces

FRONTIERS – Research

> 30 joint publications in first 3 years

> 15 publications on ethics, outlooks

“Spin off – networks”; FRONTIERS partners involved in:

- NanoBioRAISE
- Picoinside
- Kompetenznetz
- BRAINSTORM
- etc

Meetings:

- SRA-meetings
- Workshops (Winter workshops NCCR, Young Scientist Workshops)
- Conferences

FRONTIERS – Education

"It was so great to participate in this exchange program, you learn a lot when travelling and interacting with other scientific groups in Europe. I had the opportunity to work with high level researchers and excellent multi-disciplinary group while doing the project for my master thesis."

Sixth Framework Programme

FRONTIERS – Education

INASCON
2007: 93 students from 18 universities

www.inascon2008.org

Sixth Framework Programme

FRONTIERS – Science to Industry

Technological Roadmap on Nanotechnology

Master Class Workshops for Industry
QuoVadis

Spin off “Medimate”, more to follow…

- Arrows Biomedical GmbH
- Bioconnect AG
- C2V
- Chembiotech
- Concentris GmbH
- Degussa Advanced Nanomaterials
- Evotec Technologies GmbH
- Examina
- Gambro AB
- ION TOF GmbH
- MagForce AG
- MarcoTech GmbH
- nanoAnalytics GmbH
- NanoSciences Inc
- Nanoxis AB
- Nascatec GmbH
- Nikon GmbH
- Philips
- Qiagen GmbH
- Roche Diagnostic GmbH
- Rouse Patents
- Sonnenberg & Fortmann IP24
- Unilever Food and Health Research
- Veeco Instruments Europe
- 3i Global Sector
- Europhotonics

FRONTIERS – Science to Industry

FRONTIERS – Ethics

NANOJURY.ORG

HOME | INTRODUCTION | PEOPLE | PERSPECTIVES | FUTURE | LINKS

Can the Nanojury achieve influence on other issues that matter to us, like socially excluded youth?

NANOJURY: WELCOME

The need for broader democratic control over the development and global regulation of new technologies is an even bigger priority for the 21st century than it was in the 20th.

Nanotechnologies, which enable atomic scale construction, rearrangement and design of materials, have inspired Governments in the industrialised world to channel billions into national research programmes, usually without creating the regulatory institutions to monitor the health, social or environmental impacts.

The **Nanojury** was meant as a contribution towards presenting a non-specialist perspective on these dilemmas, as well as being an opportunity for citizens to have a voice on an issue that they had chosen.

TEXT ONLY VERSION | home | introduction | people | perspectives | future | links

The Nanojury was facilitated by the **PEALS Research Centre** | Web design, **ashbydesign** & Design Directions

FRONTIERS – Ethics

Available online at www.sciencedirect.com
ScienceDirect
Technological Forecasting & Social Change 75 (2008) 517–538
ELSEVIER
Technological Forecasting and Social Change

Multi-path mapping for alignment strategies in emerging science and technologies

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Abstract

Roadmapping serves both short and long term (strategic) alignment in science and technology (S&T). Forecasts of the likely future development of S&T are generated; then research and development (R&D) efforts necessary to realize various goals are backcast. But for new and emerging S&T this trusted principle does not work: the likely products are not articulated yet. A promising approach however is building mapping tools based on underlying patterns and indicators of the dynamics of emergence. This paper discusses, based on a first round application in the

www.technology-assessment.eu

Sixth Framework Programme

FRONTIERS – Communication

Newsletter, conferences

Communication meetings

Outreach @ Cambridge

Input in Brussels: Communication and Outreach

Student at practicum during Smart System Day

FRONTIERS BOOTH

Sixth Framework Programme

FRONTIERS – Communication & Ethics

UNIVERSITY OF CAMBRIDGE FRONTIERS Nanotechnology For Schools

- » Nanoscience Home
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  - » Physics at Work (link)
  - » Science Festival (link)
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NANOTECHNOLOGY FROM A TEENAGER'S PERSPECTIVE

» Outreach for Schools

The Nanoscience Centre has recently launched an initiative to promote interest and enjoyment of Nanotechnology in schools, funded by FRONTIERS, a Network of Excellence supported by the Sixth Framework Program from the European Commission. This will include visits to schools, interactive lectures, seminars and workshops.

Want to know more?

Initially visiting schools in Cambridge and the surrounding areas, the project aims to expand to include interactive lectures.

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To contact the University of Cambridge Nanoscience Centre via enquiry form, click here.

Sixth Framework Programme

FRONTIERS – Management

Small management office

Contact with other NoEs, IPs, etc

June 23rd - 26th: FRONTIERS Research Conference

Includes joint event with Nano2Life

FRONTIERS – Gender

2005: First Equality and Diversity Survey

Many issues, not necessarily gender-related

More extensive survey prepared for 2007

393 people participated (2/3 male)

FRONTIERS – Gender

Characteristics of the sample: demographic information (e.g. sex, age, ethnicity, marital status) and employment history (e.g. position, type of contract, length of academic employment);

Institutional policies and practice: employees' perceptions of procedures for recruitment and promotion and of support for career development (e.g. mentoring, appraisals);

Balancing work, family and personal life: experiences of employees with children; dual career partnerships; evaluation of institutional support for families (e.g. maternity/paternity leave, childcare provision);

Working conditions: research and responsibilities; gender-related issues; occupational culture; equal opportunities in the workplace;

Career development and job satisfaction.

FRONTIERS – Outlook

Will FRONTIERS end in January 2009?

This will only be the beginning !

Think small...

look deeper!

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www.frontiers-eu.org