



***Welcome!***

**UMK Day 2010**

**UMK Center for New Materials  
Runar Törnqvist**

# Program

## **13.00 Welcoming words**

*Runar Törnqvist, Director, UMK Center for New Materials*

## **13.10 Research Strategy of Aalto University**

*Heikki Mannila, Vice President of Academic Affairs -Research and Education, Aalto University*

## **13.25 New Bioactive Material and Professor's Vision to Inventions**

*Jukka Seppälä, Professor, Department of Biotechnology and Chemical Technology Material Technology Award 2009 winner*

## **13.45 Material Research and Inventions from an Entrepreneur's Point of View**

*Jukka Kolehmainen, Managing Director, Diarc – Shortly introduced by Runar Törnqvist due to short notice absence*

## **14.05 More Valuable Inventions from Academic Research?**

*Matti Kuusisto, Senior Consultant, Spinverse*

## **14.25 Discussion**

## **14.40 Coffee break**

# Program, cont.

## 15.00 Pitching of important research results within UMK, which contain elements of inventions and potential for commercial utilization

- **Large-Area, Lightweight and Thick Biomimetic Composites with Superior Material Properties via Fast, Economic, and Green Pathways**, Academ.Prof. Olli Ikkala, Molecular Materials Group, Aalto University
- **Removal of Light Induced Degradation in Silicon**, Dr. *Hele Savin*, Docent in Electron Physics Group, Aalto University
- **Droplet Control on Smart Surfaces**, Dr. *Lauri Sainiemi*, Microfabrication Group, Aalto University
- **Inhalable Drug Powders of Premium Performance**, Dr. *Janne Raula*, Senior Research Fellow, Teicos Pharman, [www.teicospharma.com](http://www.teicospharma.com)
- **Towards Industrial Preparation of Monodisperse Cobalt Nanoparticles** *Christoffer Johans*, Postdoctoral researcher, Physical Chemistry, Aalto University
- **Glass Embedded Ag-nanoparticles for Surface Enhanced Raman Scattering** *Ya Chen*, Research Scientist, Photonics Group, Aalto University

## 16.15 - 18.30 Poster exhibition and theme buffet

Best poster will be awarded by Academy Professor Olli Ikkala

# UMK Center for New Materials

- **The UMK Center for New Materials is a interdisciplinary research institute** across the Faculty and Department borders.
- Currently there are **32 members from 12 Departments and 4 Faculties**.
- The UMK Center for New Materials does not own research equipment or facilities. It concentrates on improving collaboration and **making new cross-disciplinary initiatives, which do not relate to any specific Department or Faculty**.

# Material Science and Inventions

- Do we expect breakthrough inventions from Aalto University material science research?
- Do we want them?
- Do we provide incentives and support?
- Are there specific actions that should be undertaken?

# Excellent Research in Advanced Materials

Four areas of excellent quality were identified in the Aalto University research assessment in summer 2009<sup>\*)</sup>

- *Advanced materials*
- *Computational science and modelling*
- *Design*
- *Information and communication technologies, and media*

<sup>\*)</sup> University Research Assessment Exercise 2009 and Bibliometric Analysis 2003–2007,  
*Project report*

# Publications in high impact journals

- Francesco Giazotto, Joonas T. Peltonen, Matthias Meschke, **Jukka P. Pekola**, Nature Physics 6, 254-259 (2010). **17**
- **Jukka P. Pekola**, Juha J. Vartiainen, Mikko Möttönen, Olli-Pentti Saira, Matthias Meschke, and Dmitri V. Averin: Hybrid single-electron transistor as a source of quantized electric current, Nature Physics 4, 120 (2008). **17**
- P. Alitalo and **S. Tretyakov**: Electromagnetic cloaking with metamaterials, Materials Today 12, 3, 22 (2009). **11**
- Díez Isabel, Pusa Matti, Kulmala Sakari, Jiang Hua, Walther Andreas, Goldmann Anja S., Müller Axel H. E., **Ikkala Olli**, Ras Robin H. A., Color Tunability and Electrochemiluminescence of Silver Nanoclusters, Angewandte Chemie International Edition 48, 2122-2125 (2009) **11**
- Kurppa, K., Jiang, H., Szilvay, G. R., Nasibulin, A. G., **Kauppinen, E. I.**, Linder, M. B.: (2007) Controlled hybrid nanostructures via protein mediated noncovalent functionalization of carbon nanotubes. Angewandte Chemie International Edition 46, 6446-6449 (2007). **11**
- Andreas Walther\*, Ingela Bjurhager, Jani-Markus Malho, Jaakko Pere, Janne Ruokolainen, Lars A. Berglund and **Olli Ikkala**, Nano Letters, *in press* **10**
- Rinkiö, M., Johansson, A., Paraoanu, G.S., and **Törmä, P.**, High speed memory from carbon nanotube field-effect transistors with high-k gate dielectric, Nano Letters 9, 643 (2009). **10**

# Some other numbers

- Number of patent applications by the University (TKK) for international IPR protection (national patent applications in key countries)  
**< 5**
- University revenues from IPR (royalties and sales of IPR)  
**About 0.1 million €/year**
- University revenues from research projects fully funded by companies from abroad (no EU, no Tekes, or other public funding)  
**About 0.4 million €/year**
- Companies originating from material science and technology research at TKK and becoming significant employers in Finland (“growth companies”)  
**Okmetic, 300 employees** (basic research in the 80ies)  
Other start-ups based on TKK material research include: Hydrocell, Adaptamat, Enfucell, Canatu,.. (< 20 employees in Finland)

*The beginning of all wisdom is recognition of facts (J.K. Paasikivi)*