



Biomedical Sensors

Foresight Workshop IV

7 June 2006, 10.00-17.00

Tampere, Finland

Foresight Biomedical Sensors

A Nordic consortium headed by SINTEF (Norway) is conducting a foresight study Foresight Biomedical Sensors (<http://www.nordic-fobis.net/>) together with participants from VTT (Finland), FOI (Sweden), S-SENCE (Sweden), STC (Denmark) and MedCoast Scandinavia. The project is supported by the Nordic Innovation Centre. This workshop is the fourth and the last to be held as parts of the project. The workshop is organized by VTT, which has been active in the area of biosensors for more than 20 years.

Objective

- To enable a strategic understanding of the possibilities and implications of the use of biomedical sensors for healthcare purposes by establishing likely scenarios for technology, applications and markets.
- To provide a framework for commercially viable exploitation of biomedical sensors in the Nordic region by enhancing a network of competencies relevant to technology and applications.

Workshop IV

In the last workshop we will try to answer the question “What do we do now?” and work with strategic recommendations and initiatives, based on results from the previous workshops.

- Summary reports from the previous Workshops
- Invited keynote speakers:
 - Prof Pankaj Vadgama, Director, IRC in Biomedical Materials
Queen Mary, University of London (Great Britain)
 - Paul Mundill, R&D Vice President, Orion Diagnostica
(Finland)
 - Prof Niilo Saranummi, VTT
 - Prof Jukka Leikkala, Tampere University of Technology
 - Dr. Wolfgang Rossner, Siemens (Germany)
- Panel discussion with invited keynote speakers
Moderator: Dag Ausen, SINTEF

Sauna and Dinner and informal discussion 18.00 - 22.00

Background The health care systems of the industrialized countries are expected to undergo major changes within the next 10 - 15 years. The number of elderly people requiring treatment will increase considerably; so-called welfare diseases and low exposure problems gain increasing attention. At the same time technical advancements in diagnostics and treatments will continue to grow. A number of new health care technologies will emerge and several will be adopted by the health care systems.

The Nordic countries have well-developed and extensive health care systems. There are strong industries within pharmaceutical development, production and marketing as well as strong companies in medical diagnostics. Micro- and nanotechnology and telemedicine are also areas where Nordic countries have a strong competence profile. In order to take advantage of the needed symbioses of these technology fields, Nordic industry need to create collaborative networks and strategic alliances. The region is in an excellent position to exploit potential benefits of biomedical sensors both as users and as vendors of sensors and systems.

WS I Established status, needs and perspectives for sensors in relation to health care and in particular the need for biomedical sensors.

WS II Addressed the use of biomedical sensors in healthcare, safety issues and drug discovery and development.

WS III How do we get there? The third Workshop established technology premises and boundaries.

Participants The workshop target group is participants from a cross-section of the health care and technology sector representing the following areas:

- Patients, private users, home care
- Doctors office (practicing MDs)
- Hospitals
- Security and bio-defence
- Drug discovery and development
- Manufacturers of diagnostic equipment
- Vendors of communication services
- Knowledge centers (Universities, research institutions and consultants)

Exhibition Researchers, students and companies are encouraged to exhibit **products, prototypes, hands-on demos** and/or **posters** related to biomedical sensors. Posters should be no larger than 0.95×1.1 m (height x width).

Registration The workshop is free of charge (incl. lunch/dinner), but pre-registration is required at **<http://www.nordic-fobis.net/workshop/ws4>**. The registration is open until Wednesday 24th May. The workshop is limited to ca 60 persons.

For further information please contact Dag Ausen, Phone: +47-2206 7546 or Inger Vikholm-Lundin, Phone: +358 40 5389484.

Location

Tampere is conveniently located in southern Finland, approximately 200 kilometers from the capital Helsinki. The city is readily reached with direct connections from several European cities, including Stockholm, Copenhagen, London and Frankfurt. Furthermore, the location enjoys the beautiful nature offering its best in the summertime.

The workshop will be held at VTT, Tekniikankatu 1, which is located in Hervanta, nine kilometers southeast of downtown Tampere.

The local buses [13](#), [20](#), and [30](#) go from the centre to Hervanta. Line 13 is the most convenient, because the route goes in front of VTT (street *Hervannan valtaväylä*). The other buses drive the street *Insinöörinkatu*, which is a little further away. In Hervanta, you should get off the bus at the shopping centre and cross the street (*Insinöörinkatu*). The bus trip takes about 30 minutes and the ticket costs 2 EUR. The ticket is valid for transfer for one hour and you can buy it from the driver.

Accommodation A limited number of rooms are available at Hotel Ilves until Tuesday 9th May

e-mail: sokos.hotels@sok.fi, Tel. + 358 20 12 34 600.

Prices are 97 Euro/night if you mention "**Foresight Workshop IV**" while making your reservation.



Prof Pankaj Vadgama
MA, BSc, PhD, FRCPath, CChem, FRSC, CPhys, FInst, FIM

Director of the IRC in Biomedical Materials

Expertise: Biosensors, interfaces, polymers

Professor P Vadgama is currently Director of the IRC in Biomedical Materials, Queen Mary, University of London and Professor of Clinical Biochemistry, Queen Mary's School of Medicine & Dentistry. Head of Service in the Department of Clinical Biochemistry, Barts and the Royal London NHS Trust. Prior to this he was Professor of Clinical Biochemistry, University of Manchester and Professor of Medical Biomaterials, Manchester Materials Science Centre.

His particular interest in biosensors has been to develop permselective, biocompatible and biomimetic polymeric membranes capable of stable transduction in whole blood and tissue. Both in vivo and in vitro work has been undertaken, including the use of miniaturised devices for glucose and lactate monitoring, immunosensing and interrogation of tissue-material interactions.

Current research work includes interfacial problems relating to sensor/biomaterial contact with the biomatrix, and the generalisable insights that may emerge from this. Projects include: Spider silk for tissue engineering, materials for implantable electronic devices, microfluidic based separation, cell-surface interactions, biomaterial degradation dynamics, conducting polymers as biomaterials, tissue bioreactor design, cochlear implant electrodes, sensors for food microbial contamination.



Niilo Saranummi, D.Tech.
VTT TECHNICAL RESEARCH CENTRE OF FINLAND
Research Professor, Pervasive Health Technologies

Niilo Saranummi is research professor in pervasive health technologies at VTT Technical Research Centre of Finland. VTT is a contract research organisation. With its 3000 employees, VTT provides a wide range of technology and applied research services for its clients, private companies, institutions and the public sector. Our turnover is about 210 million euros and we serve annually over 5000 domestic and foreign customers (www.vtt.fi).

Niilo Saranummi has worked at VTT since 1975 advancing through different positions starting as a research scientist and from 1982 onwards as the director VTT's Medical Engineering research laboratory with a staff of 70 full time employees. Since VTT's reorganisation in 1994, he has worked in VTT as a research professor. He has also worked abroad on various occasions. His current research interests include system architectures, middleware, IST for personalised health and disease management, in one concept "pervasive healthcare". He is also active in innovation, technology transfer and technology policy setting.

He has served as an expert in the setting up and running of several Finnish and Nordic technology programs in the area of health technology. He has participated as co-ordinator and partner in more than 30 EU-funded projects in the Framework Programs since 1987 in the areas of biomedical engineering and ICT for health. Currently he is elected leader of a European Ambient Intelligence community "Well-being Services @ Work". He was active in the standardisation of medical devices in the late 70's through early 80's (IEC) and in the early 90's in health informatics (CEN). In 1995, he co-founded HL7 Finland, a society affiliated to Health Level Seven (www.hl7.fi). He has served as the chair of that since its creation. He has extensive experience in working with industry partners.

He is Editor-in-Chief of IEEE Transactions of Information Technology in Biomedicine, T-ITB (2002-2007) (<http://embs.gsbnme.unsw.edu.au/pubs.html>).

In 1991-94 he served as President of the International Federation for Medical and Biological Engineering, IFMBE (www.ifmbe.org) and in 1994-97 as President of the International Union for Physical and Engineering Sciences in Medicine (IUPESM). He is secretary of the International Academy of Medical and Biological Engineering, IAMBE (2000-2006).

In 1999 he was appointed to lead an ad-hoc committee with the charge to look into the possibilities of establishing a European umbrella organisation that could cater for the needs of the European MBE community. In 2003, in the inauguration meeting of the European Alliance for Medical and Biological Engineering and Science (EAMBES, www.eambes.org) he was elected interim President of it. In 2005 he became the Past-President of EAMBES.

He is Fellow of Finnish Academies of Technology (www.facte.com), International Academy of Medical and Biological Engineering (www.ifmbe.org) and American Institute of Medical and Biological Engineering (www.aimbe.org) and senior member of IEEE.

He has published over 100 papers and chapters in peer-reviewed publications.