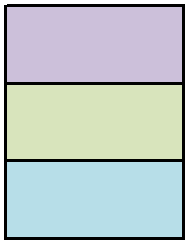
Program



Molecular Frontiers Symposium, in lecture hall Runan (joint session)
Materials for Energy Applications, in lecture hall Palmstedtsalen
Sports Technology, in lecture hall Runan

Tuesday 4 November - Thursday 6 November

"Material i våra liv"
Exhibition in Nedre foajén

Tuesday 4 November

08.15 - 09.00	Registration
09.00 - 09.10	*Welcome address* **Bengt Nordén, Chairman of Molecular Frontiers Foundation**
09.10 - 09.50	*Making Materials That Hate Water To Love Water: The Transformative Power of Chemistry* **Richard Zare**, Stanford University, United States
09.50 - 10.30	*Nanoscience and the Future of the Carbon Cycle* **Paul Alivisatos**, University of California, Berkeley, United States
10.30 - 11.00	Coffee break
11.00 - 11.40	*Thin-Film Organic Semiconductors for Energy-Economic Electronics* **Richard Friend,** Cambridge University, United Kingdom
11.40 - 12.20	*From Molecules to Efficiency of Process Units* **Signe Kjelstrup**, Norwegian University of Science and Technology, Norway
12.20 - 13.20	Lunch break
13.20 - 14.00	*The Ribosome: Life's Vital Bonding Machinery* **Ada Yonath,** Weizmann Intitute of Science, Israel
14.00 - 14.40	*Concentrating Solar Thermal Power - Pros and Cons* **Erik Pihl**, Swedish Energy Agency, Sweden
14.40 - 15.00	Coffee break
15.00 - 16.30	*Panel discussion*

Wednesday 5 November

08.15 - 09.00 Registration

Materials for Energy Applications

Energy Harvesting: Solar Fuels

Chair: Maria Abrahamsson

09.00 - 09.10 Welcome address

09.10 - 09.35 *Towards Quantitative Water Oxidation with Hematite Holes: Overcoming Surface State Recombination*
Thomas Hamann, Michigan State University, United States

09.35 - 10.00 *Mechanism of water-oxidation by Co-oxides*
Johannes Messinger,Umeå University, Sweden

10.00 - 10.20 *Molecular Engineering: Synthesis of novel organogels*
Henrik Sundén, Chalmers University of Technology, Sweden

10.20 - 10.40 Coffee break

10.40 - 11.05 *Fuels from solar energy and water - from natural to artificial photosynthesis*
Stenbjörn Styring, Uppsala University, Sweden

11.05 - 11.25 *Light Harvesting and Capturing: Covalent vs. Self-Assembled Approach*
Bo Albinsson, Chalmers University of Technology, Sweden

11.25 - 11.50 *Dynamics of electrons at work in solar energy conversion*
Villy Sundström, Lund University, Sweden

11.50 - 12.15 *Semiconductor Nanowires for Energy Applications*
Lars Samuelson, Lund University, Sweden

Sports Technology

Development and Production of Sports Materials

Chair: Christian Finnsgård

09.00 - 09.10 Welcome address

09.10 - 09.40 Keynote lecture: Innovation: *On and behind the sport scene*
Jan-Anders Månson, École Polytechnique Fédérale de Lausanne, Switzerland

09.40 - 10.05 *TeXtreme Spread Tow Carbon Reinforcements for Ultralight Sport Applications*
Henrik Blycker, Oxeon, Sweden

10.05 - 10.30 *Designing fibre-reinforced plastic sports equipment with optimized spring properties*
Anders Sjögren, Ad Manus Materialteknik AB, Sweden

10.30 - 10.50 Coffee break

10.50 - 11.15 *Auxetic materials: an emerging material for sports technology*
Andrew Alderson, Sheffield Hallam University, United Kingdom

11.15 - 11.40 *Carbon yacht spars - customised series production*
William Holt, Seldén Mast, United Kingdom

11.40 - 12.05 *Chalmers centre for Sports and technology: challenges in sailing*
Christian Finnsgård, Chalmers University of Technology, Sweden

12.05 - 13.15 Lunch break

12.15 - 13.15 Lunch break

Energy Storage: Batteries

Chair: Anders Palmqvist

13.15 - 13.40 *Non lithium based battery technologies: walking on the sodium side*
Rosa Palacin, Institut de Ciència de Materials de Barcelona (CSIC), Spain

13.40 - 14.05 *Alternative fuels for heavy vehicle applications; potential impact on materials usage*
Per Hanarp, Volvo Group Trucks Technology, Sweden

14.05 - 14.25 *The battery electrolyte: new challenges with new technologies*
Johan Scheers, Chalmers University of Technology, Sweden

14.25 - 14.45 *New materials solutions for LiS-batteries*
Aleksandar Matic, Chalmers University of Technology, Sweden

14.45 - 15.10 *Metal-air batteries: fundamental mechanisms and limitations*
Tejs Vegge, Technical University of Denmark, Denmark

15.10 - 15.30 Coffee break

Energy Transport: Power Cables

Chair: Anders Palmqvist

15.30 - 15.55 *Why and How Do Polymeric Dielectrics Conduct?*
Len Dissado, University of Leicester, United Kingdom

15.55 - 16.15 *How materials shape the future power cables*
Marc Jeroense, ABB High Voltage Cables, Sweden

Education in Sports Engineering

Chair: Maria Sundin

13.15 - 13.35 *Sports Physics at Lynchburg College*
John Eric Goff, Lynchburg College, United States

13.35 - 13.55 *How to become a sports engineer? An overview of career pathways in the sports industry*
David James, Sheffield Hallam University, United Kingdom

13.55 - 14.15 *Sports Technology Education at Sports Tech Research Centre, Mid Sweden University*
Mikael Bäckström, Mid Sweden University, Sweden

14.15 - 14.30 *Studying Sports & Technology at Chalmers*
Magnus Karlsteen, Chalmers University of Technology, Sweden

14.30 - 14.45 *Elite sport and education*
Owe Stråhlman, University of Gothenburg, Sweden

14.45 - 15.05 Coffee break

Equestrian Sports

Chair: Magnus Karlsteen

15.05 - 15.25 *New technology in equestrian science*
Maria Sundin, Chalmers University of Technology and University of Gothenburg, Sweden

15.25 - 15.50 *Surfaces for sport horses –using biological data to understand events that challenge the surface material*
Elin Hernlund, Swedish University of Agricultural Sciences, Sweden

16.15 - 16.40	*New insulating materials for next generations of high voltage cables* **Stanislaw Gubanski**, Chalmers University of Technology, Sweden	15.50 - 16.15	*Design and Testing of Footing Materials for Equine Athletes* **Mick Peterson**, University of Maine, United States
		16.15 - 16.40	*Technology in Sports – A Growing Challenge* **Harald Müller**, Fédération Equestre Internationale, Switzerland
16.45 - 18.45	Poster session in Volvofoajén		
18.45	Announcement of Poster Prize winners		

Thursday Nov 6

Materials for Energy Conversion

Chair: Anders Hellman

09.00 - 09.25	*From Second to Third Generation of Photocatalysts: Ce-doped ZrO_2* **Gianfranco Pacchioni**, University of Milano, Italy
09.25 - 09.50	*Fundamental Studies of Electrocatalysis using X-rays* **Anders Nilsson**, Stanford University, United States
09.50 - 10.10	*On the role of first principles calculations in heterogeneous catalysis* **Henrik Grönbeck**, Chalmers University of Technology, Sweden
10.10 - 10.30	Coffee break
10.30 - 10.55	*Materials Design – New Magnetic Nanolaminates from First Principles and Thin Film Synthesis* **Johanna Rosén**, Linköping University, Sweden

Sports Analysis and Modelling

Chair: Roger Johansson

09.00 - 09.30	*Keynote lecture: Sports engineering: past, present and future* **Steve Haake**, Sheffield Hallam University, United Kingdom
09.30 - 09.55	*Integrative Biomechanics and Physiology in Cross-Country Skiing* **Hans-Christer Holmberg**, Mid Sweden University, Sweden
09.55-10.20	*Biomechanics of running shoes, foot and injuries* **Antonio Cicchella**, University of Bologna, Italy
10.20 - 10.40	Coffee break
10.40 - 11.05	*Game intelligence is formal logic* **Jan Lennartsson**, Chalmers and Univ. of Gothenburg and **Carl Lindberg**, Uppsala Univ, Sweden

10.55 - 11.15 *Transition Metal Ion-Chelating Ordered Mesoporous Carbons as Replacement for Platinum in Fuel Cell Catalysts*
Anders Palmqvist, Chalmers University of Technology, Sweden

11.15 - 11.40 *Advanced heterogeneous bimetallic catalyst nanoparticles supported on nitrogen doped graphene for energy applications*
Thomas Wågberg, Umeå University, Sweden

11.40 - 12.05 *Electron Microscopy Advances in Catalysis*
Stig Helveg, Haldor Topsøe, Denmark

12.05 - 13.15 Lunch break

Energy Harvesting: Solar Cells

Chair: Christian Müller

13.15 - 13.40 *Organic photovoltaics: a Materials Science perspective*
Alberto Salleo, Stanford University, United States

13.40 - 14.05 *Organic (bio)polymers for generation and storage of solar electricity*
Olle Inganäs, Linköping University, Sweden

14.05 - 14.30 *Dual functionality at dye-semiconductor interfaces: toward increased light harvesting and multiple charge transfer events*
Maria Abrahamsson, Chalmers University of Technology, Sweden

14.30 - 14.50 *Optical* in situ *Spectroscopy for Energy-Related Nanomaterials Science*
Christoph Langhammer, Chalmers University of Technology, Sweden

11.05 - 11.25 *Technology in swimming- so much more than a fast swimsuit*
Gunnar Westman, Chalmers University of Technology, Sweden

11.25 - 11.50 *The Influence of World Cup Ball Design on Ball Aerodynamics*
John Eric Goff, Lynchburg College, United States

Treatment and Prevention of Sports Injuries

Chair: Ulf Gustafsson

11.50 - 12.10 *PressCise, a unique compression bandage*
Torbjörn Lundh, Chalmers University of Technology, Sweden

12.10 - 13.00 Lunch break

13.00 - 13.25 *Sport injuries and sporting material*
Per Renström, Karolinska Institutet, Sweden

13.25 - 13.50 *Can we use microwaves to detect muscle ruptures?*
Andreas Fhager, Chalmers University of Technology, Sweden

Sportswear

Chair:

14.15 - 14.40 *What I want for Christmas; how can material developments support apparel design?*
Arjen Jansen, Delft University of Technology, Netherlands

13.55 - 14.20 *Analysis of the thermal comfort and sport performance in the cross-country skiing's athletes for different clothing's conditions*

Alessandro Pezzoli, Turin Polytechnic and University of Turin, Italy

14.20 - 14.45 *Equipment and textiles for optimizing sports performance*

Mikael Swarén, Mid Sweden University, Sweden

14.45 - 15.00 Concluding remarks

15.00 - 15.30 End of conference, coffee served

14.50 - 15.00 Closing remarks

15.00 - 15.30 End of conference, coffee served