



ENERGY COMMITTEE

THE ROYAL SWEDISH ACADEMY OF SCIENCES



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Renewables

— systems and storage

Date: 19–20 September 2013

Venue: Beijer Hall, The Royal Swedish Academy of Sciences,
Lilla Frescativägen 4A, Stockholm

Thursday 19 September

09.30 Welcome

Prof. Sven Kullander, Chairman of the Energy Committee (RSAS), Sweden

Prof. Elisabeth Rachlew, Chair EASAC study steering committee, Sweden

Prof. Lennart Bengtsson, Chair EASAC study steering committee, Sweden

Renewables — overview: Moderator Prof. Elisabeth Rachlew

09.40 Nanoscience and the future of the Global Carbon Cycle

Dr. A. Paul Alivisatos, Lawrence Berkeley National Laboratory, USA

10.30 Recent progress in organic solar cells: From a lab curiosity to a serious photovoltaic technology

Prof. Karl Leo, Technical University Dresden, Germany

11.15 Lactid acid, ionic liquids and energy storage materials — Perspectives of Hydrothermal Biomass Upgrade

Prof. Markus Antonietti, Max Planck Institute of Colloids and Interfaces, Germany

12.00 Lunch

Photovoltaics: Moderator Prof. Olle Inganäs, EASAC study steering committee

13.00 Photovoltaics, high efficiency together with low cost

Prof. Eli Yablonovitch, University of California Berkeley, USA

13.20 Efficient polymer solar cells and first steps beyond that

Prof. René J. Janssen, Technical University Eindhoven, The Netherlands

13.40 Photovoltaic research for the support of European energy transition

Dr. Frank Dimroth, Fraunhofer-Gesellschaft, Germany

14.00 Nanowires with promise for high efficiency photovoltaics

Docent Magnus Borgström, Lund University, Sweden

14.20 Hybrid inorganic-organic photovoltaics — HI-OPV

Prof. Anders Hagfeldt, Uppsala University, Sweden

14.40 Discussion

15.10 Coffee break

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T-BANA/METRO: Universitetet BUSS/BUS 40, 70: Universitetet norra



Biofuels: Moderator Prof. Eva-Mari Aro, EASAC study steering committee

15.40 Cyanobacteria as the ultimate photo-catalysts of the conversion of carbon dioxide into chemical commodities and liquid fuel, driven by either sunlight or electricity

Prof. Klaas Hellingwerf, University of Amsterdam, The Netherlands

16.00 Energy and green chemicals from forest products

Prof. Per Gardeström, Umeå Plant Science Center, Sweden

16.20 Rational design of cyanobacteria for hydrogen production

Dr. Sascha Rexroth, Ruhr University Bochum, Germany

16.40 Discussion

17.00 End of day

Friday 20 September

Artificial photosynthesis: Moderator Prof. Villy Sundström, EASAC study steering committee

09.00 Molecular science for artificial photosynthesis: from bio-inspired catalysts to nanomaterials

Dr. Vincent Artero, CEA, France

09.20 Artificial photosynthesis with enzymes and synthetic catalysts integrated in nanostructured hybrid materials

Dr. Erwin Reisner, University of Cambridge, UK

09.40 The artificial leaf

Prof. Daniel Nocera, Harvard University, USA

10.00 Discussion

10.15 Coffee break

Energy storage: Moderator Prof. Harry Frank, Energy Committee, RSAS

10.45 Electrochemical energy storage, activity on all fronts

Michel Armand, The National Center for Scientific Research, France

11.05 Integration of renewable energies: competition between storage, the power grid and flexible demand

Prof. Thomas Hamacher, Technical University Munich, Germany

11.25 Wind energy systems- present status and ecobalances

Prof. Hermann-Josef Wagner, Ruhr University Bochum, Germany

11.45 Discussion

12.05 Lunch



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Energy systems: Moderator Prof. Lennart Bengtsson

13.05 Renewables-intensive Energy Systems for the United Kingdom

Prof. Godfrey Boyle, The Open University, UK

13.25 The importance of failure and the future of renewable energy

Dr. Ujjval Vyas, Alberti Group, USA

13.45 Requirements for system adoptions to intermittent energies

Sture Larsson, Former Technical Director and deputy Director General at Svenska Kraftnät, the Swedish Power System Operator (TSO), Sweden

14.05 Discussion

14.25 Concluding discussion

Prof. Olle Inganäs

14.50 End of workshop

This is an event organized through the European Academies Science Advisory Council (<http://easac.eu>), which gives scientific advice and input to policy makers in the European Union. The Royal Swedish Academy of Sciences (RSAS) has taken the lead in organizing hearings on the topic of sustainable energy systems towards the year 2050. The topic of sustainable energy systems has been divided into topics related to nuclear technology (fission and fusion) and renewable energy technologies and systems.

This workshop is supported by the Royal Swedish Academy of Sciences Nobel committees in physics and chemistry, Swedish Natural Science Research Council (VR), The Energy Agency (Energimyndigheten) and the Joint Research Centre (JRC).

