



Science & Technology

FORESIGHT

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PROGRAM

“Next Generation Energy Storage Technologies:
Challenges and Opportunities”

2-3 December, 2015 - Taormina

WG ENERGY



National Research
Council of Italy

Workshop on

“Next Generation Energy Storage Technologies: Challenges and Opportunities”.

Organised in the framework of the Science and Technology Foresight Project (STFP)
(<http://www.foresight.cnr.it>)

National Research Council of Italy (CNR) and AREA Science Park

Organisers: - E. Andreta; A.S. Aricò; G. Einaudi (CNR), S. Taylor (AREA Science Park).

Dates: 2nd-3rd December 2015

Venue: Hotel Villa Diodoro Taormina, Italy

Hotel Villa Diodoro Via Bagnoli Croci, 75, 98039 Taormina, Italy - <http://www.hotelvilladiodoro.com/>

Logistics

1. 1st December 2015: Arrival of all participants to the Catania airport
2. Transfer of the participants to Hotel Villa Diodoro with Bus shuttle (specific arrangement for the transfer is planned for all the arrivals including those arriving the days before; this will be communicated at least a week before the meeting)
3. 1st December 2015 from 19:00 to 21:00: Welcome party at the Hotel Villa Diodoro.
4. 2nd-3rd December 2015: **Workshop (from 9:00 a.m. 2nd Dec. to 13:00 3rd Dec.; eventual continuation in the afternoon)**
5. 2nd December 2015 Evening: Social dinner
6. 3rd December 2015 Evening: Dinner.
7. 3rd December 2015 Afternoon / 4th December 2015 Morning Transfer to Catania Airport by Bus shuttle (specific arrangement is also planned for the transfer to the airport).

Workshop

2nd December 2015:

Introduction session:

1. 9:00-9:10 Ezio Andreta (CNR) - Foresight Project Coordinator: *Welcome*
2. 9:10-9:20 – Salvatore Freni - Director of CNR-ITAE: Local organizer welcome
3. 9:20-9:30 Antonino S. Aricò (CNR) - Foresight Project, Energy Storage Responsible / Giorgio Einaudi (CNR) - Board member Science & Technology Foresight Project: *Introduction to the workshop project activities*

Presentations and Discussion:

Session 1: Energy: Key technologies, Policy strategies, Industry requirements – Chairman Stephen Taylor (AREA Science Park)

9:30-9:40

1. **Christos Tokamanis** Head of Unit “Advanced Materials and Nano Technologies”; Directorate-General “Research & Innovation” , European Commission
Advanced Materials and Nano Technologies for Energy Storage applications: the contribution of policy makers

9:40-9:50

2. **Kate Burson** Chief of Staff, Energy & Finance, Office of the Governor of New York (USA)
Financial and policy making aspects for the energy sector

9:50 -10:00

3. **Isotta Cerri** Senior Manager, Advanced Technology Division Production Engineering Group Toyota Motor Europe NV/SA (Belgium)
Energy storage systems for automotive applications

10:00 -10:10

4. **Eli S. Leland** Co-founder Voltaiq (USA)
Key technologies in energy storage

10:10 -10:20

5. **Nicholas Van Dijk** Research Director, ITM Power plc (UK)
Hydrogen Technologies and Power to Gas

10:20 -11:10

Joint discussion on Session 1

11:10-11:30 Coffee Break

Session 2: Electrochemical energy storage - Chairman Giorgio Einaudi (CNR)

11:30 -11:40

6. **Bruno Scrosati** Professor, Istituto Italiano di Tecnologia (Italy)

Electrochemical Energy Storage: Next Generation Li Batteries

11:40 -11:50

- 7. Kioyshi Kanamura** Professor, Tokyo Metropolitan University (Japan)
Metal-air batteries: Magnesium-air batteries

11:50 -12:00

- 8. Doron Aurbach** Professor, Bar-Ilan University (Israel)
Rechargeable Sodium Batteries

12:00 -12:10

- 9. Margret Wohlfahrt Mehrens** Senior Researcher, ZSW, Ulm (Germany)
Next Generation Supercapacitors

12:10 -13:00

Joint discussion on Session 2

13:00 -15:00 Lunch

Session 3: Hydrogen and Fuel cells - Chairman Antonino S. Aricò (CNR)

15:00 -15:10

- 10. Piotr Zelenay** Senior Researcher, Materials Physics and Applications, Los Alamos National Laboratory (USA)
New research directions for fuel cell systems

15:10 -15:20

- 11. Daria Vladikova**, Director of Institute of Electrochemistry and Energy Systems, Bulgarian Academy of Sciences (Bulgaria)
Advances in Hydrogen Technologies and Fuel cells

15:20 -15:30

- 12. Qingfeng Li**, Professor, Department of Energy Conversion and Storage - Technical University of Denmark
Novel intermediate temperature ionic conductors for fuel cells and electrolyzers

15:30 -16:00

Joint discussion on Session 3

Session 4: Thermal storage, CO₂ recycling, distributed generation - Chairman Ezio Andreola (CNR)

16:00 -16:10

- 13. Peter Schossig** Head of Department thermally active materials and solar cooling Division Thermal Systems and Buildings Fraunhofer-Institut für Solare Energiesysteme ISE (Germany)
New ideas for thermal energy storage

16:10 -16:20

- 14. Gabriele Centi**, Professor, University of Messina (Italy)
New approaches to recycle carbon dioxide and reduce emissions

16:20 -16:30

- 15. Siglinda Perathoner**, Professor University of Messina (Italy)
Sustainable energy conversion and storage

16:40 -17:20

Joint discussion on Session 4

17:20 -17:40 Conclusions of the first day E. Andreta - A.S. Aricò – G. Einaudi

20:00 Social Dinner

3rd December 2015:

9:30-13:00 Brainstorming activities

Moderator: Stephen Taylor (AREA Science Park)

9:00-10:00

1. *Discussion about the proposed research directions: the point of views of the policy makers, industry representatives and scientists*

10:00-11:00

2. *Assessment and identification of priority topic areas and their medium-long term potential applications including socio-economic impacts*

11:00-11:30 Coffee break

11:30-12:00

3. *Discussion of funding needs, market potential and social acceptability.*

12:00-12:30

4. *Paving the way for preparing a Report on energy storage*

12:30-13:00

5. *Conclusions: Planning the program of a successive F2F workshop. – E. Andreta, A.S. Aricò, G. Einaudi*

13:00-15:00 Lunch

Afternoon: eventual continuation of the discussion

Afternoon - Transfer to Catania Airport

20:00 Dinner

4th December 2015 Transfer to Catania Airport