SOPHIA
European Research Infrastructure

Symposium on European PV Research Infrastructures

Chambery, France, 22 January 2015 (09:00 – 17:00)
National Solar Energy Institute – INES

SOPHIA Networking activities – Results

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A European Project supported within the Seventh Framework Programme for Research and Technological Development

Sophia Networking activities

- **Sophia Networking activities : main aim**

  - Defining and sharing common PV RTD objectives
  - Open cooperative approach over the future of PV research by expert committees
  - Define common procedures for testing and characterizing PV materials, modules and systems, etc
  - Organize training (onsite/online courses, summer schools) and exchange of personnel among different Research Organizations
  - Dissemination of knowledge: internally and to non SOPHIA members

Sophia Networking activities

- **interaction among partners: main results**

  - 18 networking seminars and workshops
  - 11 common databases shared among partners
    - Sets of measurement data and test results:
    - Listing of test- and analysis capabilities:
    - TCO test facilities, PV systems and smartgrid test facilities, PV module test equipment, accelerated ageing test procedures, silicon imaging techniques
  - Overviews of modelling tools on materials, devices, modules an PV systems
  - Proposals of common testing procedures, and recommended best practices, proposals of amendment to IEC TC82 WG2 & WG7
  - Several events/activities proposed to non SOPHIA Partners

Knowledge Exchange Activities

- **SOPHIA Knowledge Exchange Strategy**

  - Support actions among SOPHIA partner organizations to promote and sustain co-operative work
  - Enhance and promote access of human resources to major research infrastructures in photovoltaic R&D
  - Facilitate the development of science and technology on the use of the Sophia infrastructures through training of human resources at different stages of their career through targeted seminars, webinars, workshops, short courses, summer schools
  - Assure equal opportunities in exchange and training for men and women, and for personnel of less favored European countries and research organizations

Knowledge Exchange Activities

- **Personnel Exchange Actions**

  - Short stay of permanent staff aimed for technical discussions, transferring technology and technical support

    Senior researcher/expert coming to a host organization to teach/share knowledge on deposition techniques, characterization of materials and devices, performance and life time testing, accuracy of measurements and characterization, validation of models, computational procedures, etc.

  - Bilateral visit/meeting

    For mutual help, inter-comparison of models, common vision, test and round robin procedures, etc (duration 1-3 days - short visit). One example is Solar Direct Normal Irradiance (DNI) inter-comparison procedure

  - Exchange of new personnel resources:

    Students and early stage researchers willing to receive a research training in a specific SOPHIA host institution to improve their knowledge and ability regarding specific research activities

Knowledge Exchange Activities

- **Realized training workshop/courses**

  - Sophia Workshop on PV-Module Reliability "Interactive training course on EL & DLIT characterization of PV modules" held by ECN in June 2013
  - four Sophia Workshops on PV-Module Reliability organized by FHG-ISE, FHG-IWES, JRC, CEA-INES, international
  - four Spectroradiometer and Broadband Intercomparison held from 2011 to 2014 on Direct Normal Irradiance radiation
  - **two** workshop on analytical tools for PV organized by HZB;
  - four summer schools ISU-Energy International Summer University on Solar energy, wind energy, economics of renewable energy held in Falera, Switzerland;

Knowledge Exchange Activities

- **training workshop/courses (…)**

  - two workshop on PV Modelling infrastructure: The modeling chain (2011) and PV performance modelling 82013) organized respectively by FZ- Jülich and CEA-INEs respectively
  - two BIPV Workshops –on What are the requirements of PV in buildings organized by CEA-INEs in 2013 and 2014
  - Short course the “Best practices for power measurement of PV modules” held by JRC in July 2014.

Training workshops

Workshop on analytical tools for PV (2012, 2014)

characterization of materials for photovoltaic application by means of the CISSY at the BESSY synchrotron

- X-ray emission spectroscopy (XES),
- X-ray absorption spectroscopy (XAS)
- photoelectron spectroscopy (XPS, UPS, HIKE)
- The Electron Paramagnetic Resonance Facility

i.e. one of the most prominent defects characterization in thin film silicon, e.g a-Si and µc-Si:H. by paramagnetic states analysis

2012: 15 students and young researchers from 11 different countries

2014: 14 participants from 9 countries

ISUenergy summer universities in Falera, Switzerland

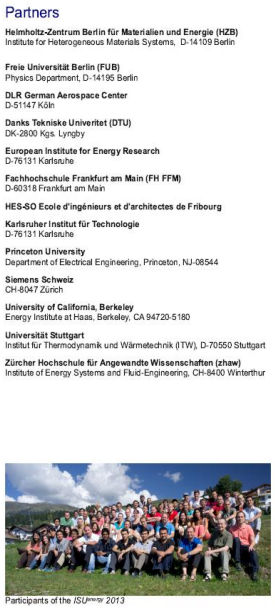
The school integrates different academic in Physics, Material Science, Material Engineering, Architecture, Sociology, Political Science and Economics and it provide students with a solid foundation in photovoltaics, solar thermal technologies, wind energy, solar architecture, sustainability, smart grids and energy storage., LED lightening system)


The *ISU*^{energy} *2014* highlights

ISU^{energy} *2014* will provide students with a solid foundation in renewable energies (especially photovoltaics, solar thermal and wind technologies), solar architecture and sustainable aspects. Well-known scientific researchers from leading universities and institutes will give lectures covering a wide range of topics on the principles of renewable energies.

Theoretical knowledge will be complemented with practical workshops (table experiments) in the first week and creative group projects (e. g. building a solar oven or installation of a LED lightening system) in the second week with special emphasis on hands-on experience. Overall *ISU*^{energy} *2014* will be two weeks of highly intensive training in the interdisciplinary areas of renewable energies.

Accommodation is arranged in fully-equipped cosy holiday flats with fellow students, which stimulates information transfer and networking among participants. Furthermore, the great location of Flims/Laax/Falera allows you to enjoy plenty of outdoor activities during your recreational time.


Partners

Helmholtz-Zentrum Berlin für Materialien und Energie (HZB)
Institute for Heterogeneous Materials Systems, D-14109 Berlin

Freie Universität Berlin (FUB)
Physics Department, D-14195 Berlin

DLR German Aerospace Center
D-51147 Köln

Danks Tekniske Univeritet (DTU)
DK-2800 Kgs. Lyngby

European Institute for Energy Research
D-76131 Karlsruhe

Fachhochschule Frankfurt am Main (FH FFM)
D-60318 Frankfurt am Main

HES-SO Ecole d'ingénieurs et d'architectes de Fribourg

Karlsruher Institut für Technologie
D-76131 Karlsruhe

Princeton University
Department of Electrical Engineering, Princeton, NJ-08544

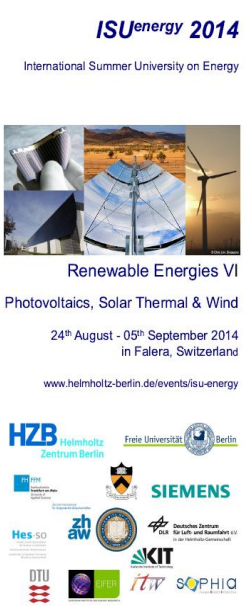
Siemens Schweiz
CH-8047 Zürich

University of California, Berkeley
Energy Institute at Haas, Berkeley, CA 94720-5180

Universität Stuttgart
Institut für Thermodynamik und Wärmetechnik (ITW), D-70550 Stuttgart

Zürcher Hochschule für Angewandte Wissenschaften (zhaw)
Institute of Energy Systems and Fluid-Engineering, CH-8400 Winterthur

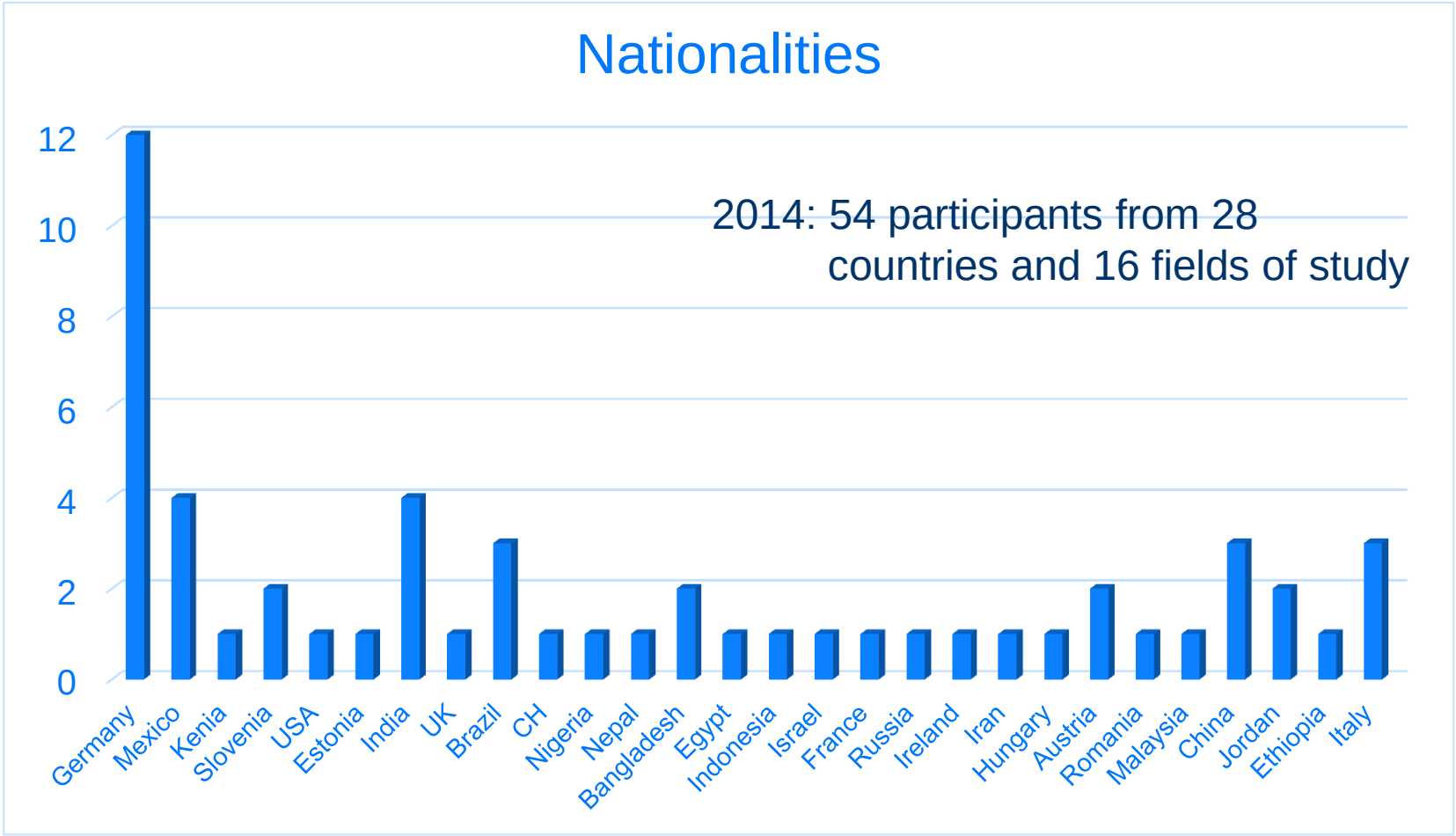
Participants of the *ISU*^{energy} *2013*



- 2011: 63 Participants from 22 countries and 12 fields of study
- 2012: 62 participants from 27 countries and 12 fields of study
- 2013: 52 participants from 24 countries and 10 fields of study

Knowledge Exchange Activities

ISU-Energy 2014



Sophia Networking activities (NA)

- **Common objective of SOPHIA training workshop/courses**

  - Course/webinars focused -- > on gaining practical experience
  - Exchange experiences and best practices -- > aiming to harmonized approaches
  - Assuring that any participant can directly realize measurements --- > make interpretation on selected samples assisted by experts
  - Participants are requested to contribute to the interactive discussion, --- > by giving a presentation, when applicable

- **SOPHi@WEbinar**

ADVANTAGES

- Time saving and reducing travel costs:
- Fluid and improved Communication:
- No limitation on event location:
- Focused Involvement on the topic issues of direct interest
- Storage and streaming of produced output:

SOPHi@WEbinar

PRESENTER

Speaker/teacher

researcher/scientist offering the seminar on line. A local audience can also follow lecture/presentation on site

Adobe® Connect™ web conferencing platform

ENEA

On line Participant

Audience/classroom :*

the groups of students/researchers or individuals who follow the event on line.

On line

Live chat

Conference rooms

Classrooms

Individuals

MODERATOR/HOST

Chairperson(s)

He/she organizes and manages the event, introduces and gives the floor to the speakers, manages questions/comments to the speaker by "chat" or directly by microphone at the end of presentation

SOPHi@Webinar Topics

- Si TECHNOLOGY
- THIN FILM TECHNOLOGY
- LIGHT TRAPPING CONCEPT
- ADVANCED INORGANIC MATERIALS
- OPV ORGANIC PHOTOVOLTAICS
- CPV-CONCENTRATION PHTOVOLTAICS
- MATERIAL CHARACTERIZATION
- MATERIAL AND CELL MODELLING
- MATERIAL DEGRADATION
- MODULE AND SYSTEM PERFORMANCE
- LIFETIME PREDICTION AND RELIABILITY

SOPHi@Webinars Platform key roles

SOPHi@WEbinar

ENEACRESCO Supercomputin

The E-learning platform can manage up to 600 participant

Peculiarities of Sophi@webinar platform

- designed and powered by ENEA and based on Adobe Connect Corporate platform.
- It runs on a ENEA supercomputing Cresco-Centro
- connected to GARR, the Italian Academic & Research Network based on high-bandwidth circuits up to 10 Gbps, using various technologies (DWDM, SDH and MPLS
- licensed "on-premise" all data are stored on ENEA HW and fully managed by internal staff,

SOPHi@WEbinar

- 30 webinars organized since March 2013
  - Around 2-3 events/month organized
- 700 “live” participants in total (> 60 in streaming)
  - Majority of non-SOPHIA members
- Information on all courses available on the Sophia “events” web page
  - http://www.sophia-ri.eu/news-events/news/
  - http://uttp.enea.it/sophiawebinar
- Several pdf presentation of workshop and webinar (pdf, video) are available on-line on Sophia Events pages.

SOPHIA European Research Infrastructure webinar

HOME | ABOUT US | TECHNICAL INFO | UPCOMING WEBINAR | PAST WEBINAR | SPEAKERS | EVENTS | NEWS | FP7-SOPHIA

Links

- Event Leaflet
- Topic1_Video_Assoa
- Topic1_pdf_Assoa
- Topic2_Video_Schneider
- Topic2_Slides_Schneider
- Topic2_pdf_Schneider
- Topic3_pdf_Hiroko
- Topic4_Video_Assoa
- Topic4_pdf_Assoa

YOU ARE HERE : PAST WEBINARS ▸ DIFFERENT BIPV PERSPECTIVES (PART I) : AN EUROPEAN, A NON EUROPEAN, A RESEARCHER, AN ARCHITECT, THE MARKET OUTLOOK

in date 12/01/2015

Different BIPV perspectives (part I) : an European, a Non European, a researcher, an architect, the market outlook

Fabrication Building Hans Grohe GmbH
Architect: Rof Disch, Freiburg

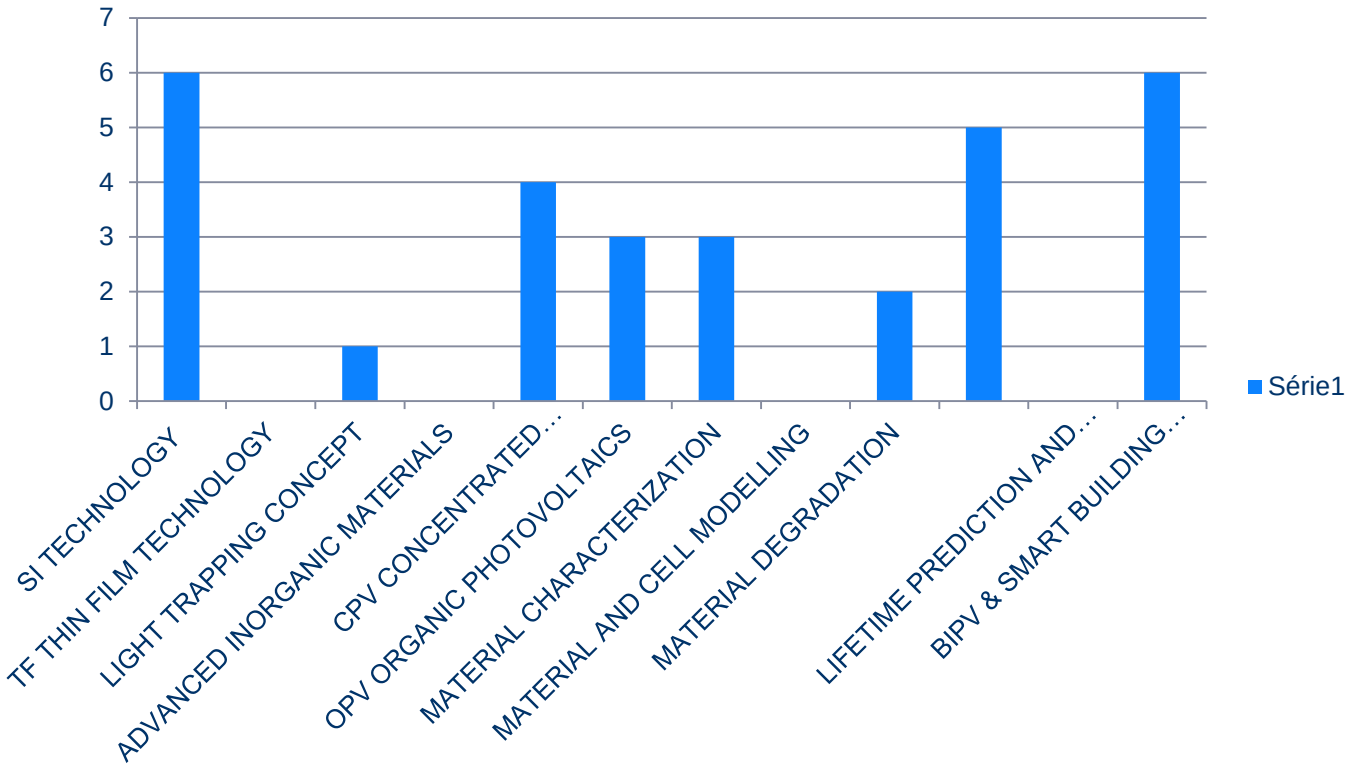
The integration of Photovoltaic elements into the building, the so called ‚BIPV' is even today – after the solar revolution has started off worldwide – a huge challenge.

BIPV might see a new era of success in the developing super mass markets for PV as solar energy will become the 'largest source of electricity worldwide'

The webinar based on three presentations of 2nd SOPHIA BIPV workshop presents different point of views of an PV Technology Research association representative, an architect and a Researcher on Building Integrated PV topic, considering market situation, countries regulations, R&D and architecture features.

Useful information

SOPHi@WEbinar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MATERIAL DEGRADATION
LIFETIME PREDICTION AND…
BIPV & SMART BUILDING…
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- **Last but not least events !!!!**

SOPHiA webinar

Different BIPV perspectives part II

Landscape, building integrated and performance modelling

29th January 2015 / 9:00 – 11:45

Central European Time (CET) +0100 UTC; (Brussels Time)

SOPHiA webinar

SOPHi@webinar

Short Course on CPV-concentrating Photovoltaic Indoor/Outdoor Characterization

30th January 2015 / 09:30 – 12:45

Central European Time (CET) +0100 UTC; (Brussels Time)

To register

On-line partecipation

http://uttp.enea.it/sophiawebinar

●Conclusion

- FP7-SOPHA project has significantly improved cooperative approach and work among European PV RTD community
- Several improvements on procedures and best practice in testing and characterizing introduced
- New vision and effectiveness in organizing training (onsite/online courses, summer schools) and exchange of personnel among different Research Organizations