



«ETTORE MAJORANA» FOUNDATION AND CENTRE FOR SCIENTIFIC CULTURE  
TO PAY A PERMANENT TRIBUTE TO GALILEO GALILEI, FOUNDER OF MODERN SCIENCE  
AND TO ENRICO FERMI, THE "ITALIAN NAVIGATOR", FATHER OF THE WEAK FORCES



# INTERNATIONAL SCHOOL OF SOLID STATE PHYSICS

## 56th Course

# MATERIALS FOR RENEWABLE ENERGY

ERICE-SICILY: 18 – 28 JULY 2012

Sponsored by the: • Italian Ministry of Education, University and Scientific Research • Sicilian Regional Government  
• National Research Council • European Project N4E

### TOPICS AND LECTURERS

#### Energy Overview

*Critical Materials Issue for the Energy World*

*Carbon capture and recycling for energy storage*

*Charge generation and transport in PV*

*Light-matter interaction*

*Conventional PV*

*Concentrating PV*

*Thin film*

*PV, CIGS, CZTS, PV Industry*

*Opto-Electronic in PV*

*Nanostructures for PV*

*Organic/Dye PV*

*Nuclear fusion*

*Wind energy*

*Geothermal, Solar fuels and artificial photosynthesis*

*Concentrated solar power*

*Thermoelectricity*

*Solar water splitting*

*Fuel cells, Hydrates, Green chemistry*

*Smart grid*

*Vehicles and transportation*

- J. AMOUROUX, Université Pierre et Marie Curie, Paris, FR
- H. ATWATER, California Institute of Technology, Pasadena, CA, US
- D. CAHEN, Weizmann Institute of Science, Rehovot, IL
- D. CARLSON, Carlson PV Consulting, Williamsburg, VA, US
- A. CUOMO, 3SUN, Catania, IT
- C. GERARDI, STMicroelectronics, Catania, IT
- D. GINLEY, National Renewable Energy Laboratory, Golden, CO, US
- F. JAUDIN, BRGM, Orléans, FR
- D. JOST, World Trade Institute, Bern, CH
- W. KUHS, University of Goettingen, Goettingen, DE
- S. LOMBARDO, CNR-IMM, Catania IT
- L. MEDA, ENI-Donegani Institute, Novara, IT
- R. O'HAYRE, Colorado School of Mines, Golden, CO, US
- L. ORR, Stanford University, Stanford, CA, US
- J. PEINKE, University Oldenburg, Oldenburg, DE
- J. POATE, Colorado School of Mines, Golden, CO, US
- S. SARTORI, Institute for Energy Technology, Kjeller, NW
- B. STANBERY, HelioVolt Corporation, Austin, TX, US
- G. TIMÒ, RSE, Piacenza, IT
- W. TUMAS, National Renewable Energy Laboratory, Golden, CO, US
- A. WEIDENKAFF, Empa and University of Bern, Duebendorf and Bern, CH
- E. YABLONOVITCH, University of California, Berkeley, CA, US

### PURPOSE OF THE COURSE

Aim of the Course is to present the state-of-the-art and future perspectives for materials applied to the production and storing of renewable and sustainable energy. Lectures will be given by some of the most recognized academic and industrial experts, merging physics, chemistry and engineering knowledge in several fields. A general overview of the energy supplying will be presented by discussing also conventional energy sources and next generation nuclear production. Topics of the School are: the global warming problem, conventional and sustainable technologies, solar energy conversion (PV and thermal), thermal energy conversion, solar chemical conversion, water solar splitting, wind energy conversion, fuel cells, storage, vehicles, nuclear fusion, green chemistry, smart grid. The School will be a great opportunity for bringing together worldwide students, young scientists and experts in a friendly atmosphere for reciprocal benefits in terms of enthusiasm, knowledge and new ideas.

### APPLICATIONS

Persons wishing to attend this Course should apply via e-mail to:

- Professor Antonio TERRASI  
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The application form and further information can be found at the link  
<http://www.dfa.unict.it/home/terrasi/>

This application should include:

- date and place of birth, as well as current nationality;
- current position and affiliation;
- academic degrees;
- list of publications.

### POETIC TOUCH

According to legend, Erice, son of Venus and Neptune, founded a small town on top of a mountain (750 metres above sea level) more than three thousand years ago. The founder of modern history — i.e. the recording of events in a methodic and chronological sequence as they really happened without reference to mythical causes — the great Thucydides (~500 B.C.), writing about events connected with the conquest of Troy (1183 B.C.) said: «After the fall of Troy some Trojans on their escape from the Achaei arrived in Sicily by boat and as they settled near the border with the Sicilians all together they were named Elymi: their towns were Segesta and Erice.» This inspired Virgil to describe the arrival of the Trojan royal family in Erice and the burial of Anchises, by his son Aeneas, on the coast below Erice. Homer (~1000 B.C.), Theocritus (~300 B.C.), Polybius (~200 B.C.), Virgil (~50 B.C.), Horace (~20 B.C.), and others have celebrated this magnificent spot in Sicily in their poems. During seven centuries (XIII-XIX) the town of Erice was under the leadership of a local oligarchy, whose wisdom assured a long period of cultural development and economic prosperity which in turn gave rise to the many churches, monasteries and private palaces which you see today.

In Erice you can admire the Castle of Venus, the Cyclopean Walls (~800 B.C.) and the Gothic Cathedral (~1300 A.D.). Erice is at present a mixture of ancient and medieval architecture. Other masterpieces of ancient civilization are to be found in the neighbourhood: at Motya (Phoenician), Segesta (Elymian), and Selinunte (Greek). On the Aegadian Islands — theatre of the decisive naval battle of the first Punic War (264-241 B.C.) — suggestive neolithic and paleolithic vestiges are still visible: the grottoes of Favignana, the carvings and murals of Levanzo. Splendid beaches are to be found at San Vito Lo Capo, Scopello, and Cornino, and a wild and rocky coast around Monte Cofano: all at less than one hour's drive from Erice.

More information about the «Ettore Majorana» Foundation and Centre for Scientific Culture can be found on the WWW at the following address:  
<http://www.ccsem.infn.it>

- PLEASE NOTE  
Participants should arrive in Erice on 18 July not later than 7 pm.