



«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 CRYSTALLOGRAPHY

39th Course: ENGINEERING OF CRYSTALLINE MATERIALS PROPERTIES: STATE-OF-THE-ART IN MODELLING, DESIGN, APPLICATIONS

ERICE-SICILY: 7 - 17 JUNE 2007

Sponsored by the: • International Union of Crystallography
• Italian Ministry of Education, University and Scientific Research • Sicilian Regional Government

PROGRAMME AND LECTURERS

Supramolecular design of bioactivity

Biogenic crystallization: strategies and mechanisms

Crystal tailoring

Polymorphism

Bio-inspired crystal engineering and nanotechnology

NMR Crystallography

Elucidation of structure-property relationships

Amorphous materials

Crystal growth

Chirality

Solid state reactions

Hydrogen bonds

Magnetic, conducting, superconducting, NLO materials

Databases for crystal engineering

From design to devices

Prediction of organic crystal structures

Polymer materials

The chemistry of nucleation

Opportunities for the crystal engineer

• J. AIZENBERG, Lucent, Murray Hill, NJ, USA

• A. BACCHI, University of Parma, I

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• J. BERNSTEIN, University of the Negev, Beer-Sheva, IL

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• P. FENTER, Argonne National Laboratory, IL, USA

• F. GREPIONI, University of Bologna, I

• L.W. HOBBS, Massachusetts Institute of Technology, Cambridge, MA, USA

• R. KURODA, University of Tokyo, JP

• L. LEISEROWITZ, Weizmann Institute, Rehovot, IL

• J.S. MILLER, University of Utah, Salt Lake City, UT, USA

• S.L. PRICE, University College, London, UK

• S. REUTZEL-EDENS, Eli Lilly & Company, Indianapolis, IN, USA

• C. ROVIRA, ICMAB, Barcelona, E

• U. RYCHLEWSKA, University of Poznan, PL

• J. SCOTT, Monash University, Clayton, AUS

• S.I. STUPP, Northwestern University, Evanston, IL, USA

• M.J. TREMAYNE, University of Birmingham, UK

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PURPOSE OF THE COURSE

Crystal Engineering is a booming field of research attracting the interest of a broad multidisciplinary community of scientists, not only from all traditional branches of Chemistry but also from Physics, Biology, Materials Science and Engineering. The recent launch by the two major chemical societies (ACS and RSC) of journals devoted solely to Crystal Engineering witnesses the relevance of the field. A Course assessing the state of the art and providing a forward look is therefore particularly timely for young European researchers with an interest in Materials Science. Both the factors that govern the presence of the desired property (magnetism, non-linear optical response, superconductivity, nanoporosity...), and the control of variables in the nucleation and growth of crystalline materials and their polymorphic forms, have to be understood.

This is an interdisciplinary field: at present, there is little communication among the various research groups, resulting in limited exchange of the reciprocal needs and results. The programme requires each specialist to present his/her field, so that the audience will gain a common background; this is a precondition for successful planning and exploitation of molecular materials. A few key parameters rule the recognition and aggregation of molecules or ions in ordered solids; a relationship between the structure of the individual building block and the collective properties of the materials, including those bio-inspired, should be discovered. Accurate research in these two directions will foster the birth of techniques for the rational design of new materials. In addition, the training course intends to increase dissemination of results and to stimulate the young scientists towards collaborative projects about materials and their properties (energy storage and distribution, communication technology, biotechnology and nano-technology etc.).

APPLICATIONS

Interested candidates should register by 30 November 2006 using the format available at <http://www.chemistry.unipd.it/erice> or write to the Executive Secretary of the International School of Crystallography:

- Professor Paola SPADON - Executive Secretary
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specifying:

- full name(s), age, sex, citizenship;
- postal address, phone, fax, electronic mail;
- present academic position and scientific interests;
- the title or abstract of a scientific contribution to the poster session(s) which might be included in the programme.

Young researchers please add a list of no more than five scientific publications and a letter of recommendation from the group leader or a senior scientist, where the amount of support, if needed, is justified. In order to reflect the multi-disciplinary nature of the Course, attendance will be encouraged on the basis of the scientific discipline, publication record and the correspondence between the current research of the applying scientists and the listed topics.

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 Sicanians 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 Anchise, by his son Enea, 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 International School of Crystallography can be found on the WWW at the following address:
<http://www.crystalerice.org>

- PLEASE NOTE
Participants must arrive in Erice on June 7, 2007, not later than 8 p.m.

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>