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

INTERNATIONAL SCHOOL OF CRYSTALLOGRAPHY

51st Course: ELECTRON CRYSTALLOGRAPHY

ERICE-SICILY: 1 – 10 JUNE 2018

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

PROGRAMME AND LECTURERS

General theory of diffraction and diffraction tomography of proteins
• J. P. ABRAHAMS, University of Basel, CH

Scanning diffraction techniques
• A. EGGEMAN, University of Cambridge, UK

Difraction data processing for crystallographic applications
• M. GEMMI, Italian Institute of Technology, Pisa, IT

Pair Distribution functions
• T. GORELIK, Goethe University, Frankfurt, DE

Fundamental crystallography essential for TEM users
• J. HADERMANN, University of Antwerp, BE

Symmetry determination by electron diffraction
• D. JACOB, University of Lille, FR

Scanning transmission electron microscopy
• C. KOCH, Humboldt University, Berlin, DE

Spot diffraction and the principles of electron diffraction tomography
• U. KOLB, Johannes Gutenberg University Mainz, DE

Transmission electron microscopy and high-resolution TEM
• L. MARKS, Northwestern University, Evanston, IL, US

Sample preparation for various imaging and diffraction techniques
• L. MESHI, Ben-Gurion University, Beer-Sheva, IL

Crystal structure refinement by least squares
• P. MÜLLER, MIT, Boston, MA, US

Quantitative convergent beam electron diffraction
• P. NAKASHIMA, Monash University, Melbourne, AU

Crystal structure refinement from electron diffraction data
• L. PALATINUS, Czech Academy of Sciences Prague, CZ

Spectroscopic techniques
• Q. RAMASSE, SuperSTEM, Daresbury, UK

Electron diffraction from soft matter
• A. STEWART, University of Limerick, IE

Dynamical diffraction theory
• D. Van DYCK, University of Antwerp, BE

Diffuse scattering
• R. WITHERS, National University, Canberra, AU

Combination of electron diffraction with powder diffraction
• X. ZOU, Stockholm University, SE

PURPOSE OF THE COURSE

In the era of nanoscience, the size of particles to be investigated gets smaller and smaller, and traditional techniques used to characterise materials are being stretched beyond their limit. Electron Crystallography (EC) is a powerful tool to study crystal structure and properties of nano-sized materials and fills the void of information left when other methods struggle to provide convincing data for nanoscale objects. Exciting developments such as aberration correctors, dedicated specimen-holders, highly sensitive cameras, new data acquisition techniques, automated routines for data collection and new data processing software and methods allow electron crystallographers to determine crystal structures from micro- and nanocrystals with increasing accuracy and astonishing level of detail.

The Course intends to review the traditional as well as the modern methods of electron crystallography; it will be divided into three major fields:

1) provide a strong background on crystallography in general and electron crystallography in particular; 2) introduce students to state-of-art techniques of electron crystallography including experimental techniques, data acquisition and data processing as well as to supporting techniques such as spectroscopy; 3) cover different approaches for structure analysis and derive structure-property relationship.

The Course will cover a range of materials, from organic molecules like pigments and drugs through complicated inorganic and metallic materials and minerals to protein structures. In addition to the standard crystalline materials it will focus also on amorphous, nano- and meso-crystalline state.

APPLICATION

Interested candidates should register by 30th November 2017 using the form available at the URL **http://erice2018.azuleon.org** or by writing to the Executive Secretary of the International School of Crystallography:

Dr. Annalisa Guerri
University of Florence – Via della Lastruccia, 3 – 50019 Sesto Fiorentino, IT
Tel: +39.055.4573429 – email: *annalisa.guerri@unifi.it*

Please include the following information in your application: i) Your full name(s), age, gender, citizenship; ii) Your postal address, phone, fax, electronic mail; iii) Your present academic position and scientific interests; iv) The title or abstract of a scientific contribution to the poster session(s) which might be included in the programme.

Applicants may be able to apply for partial financial support. Please visit www.crystalerice. org to view the full eligibility criteria. Young researchers should include in their application a list of no more than five scientific publications that they have authored, and a letter of recommendation from their supervisor or from a senior scientist, that justifies any support that the researcher requests. In order to reflect the multi-disciplinary nature of the Course, priority will be given to applicants who have an appropriate scientific discipline, a good publication rate and a strong correspondence between their current research interest and the topics covered by the School.

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 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 must arrive in Erice no later than 8 p.m. on 1st June 2018.

More information about the International School of Crystallography can be found on the WWW at the following address:
http://www.crystalerice.org

J. HADERMANN – L. PALATINUS – A. STEWART
DIRECTORS OF THE COURSE

T.L. BLUNDELL
DIRECTOR OF THE SCHOOL

A. ZICHICHI
EMFCSC PRESIDENT AND DIRECTOR OF THE CENTRE