«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 WATER AND WATER SYSTEM

2nd Course: *POLYMERS AND SOFT MATERIALS: GLASSES, GELS AND NETWORKS*

ERICE-SICILY: 9 – 16 JULY 2019

Sponsored by the: Italian Ministry of Education, University and Scientific Research • Sicilian Regional Government • • CSGI • CNR-HORIBA-MIFT Department of University of Messina • University of Naples "Federico II" • CRdC Tecnologie S.c.a.r.l.

PROGRAMME AND LECTURERS

Soft matter in catalysis
• G. CENTI, University of Messina, IT

(I) Optical techniques for the investigation of soft matter
(II) The jamming and unjamming transitions in dense cell collectives
• R. CERBINO, University of Milano, IT

A framework for dynamical nonequilibrium molecular dynamics simulations
• G. CICCOTTI, University La Sapienza Roma, IT

Cluster approach to the phase transitions from fluid to amorphous solids: Gels, glasses and granular materials
• A. CONIGLIO, University of Napoli Federico II, Napoli, IT

Physical aging of glasses: Theory and experiment
• J. DYRE, Roskilde University, Roskilde, DN

Coarse grained polymer dynamics and rheology
• F. GRECO, University of Napoli Federico II, Napoli, IT

Neutron scattering in soft-condensed matter
• F. MALLAMACE, MIT, Cambridge, MA, US; CNR-ISC, Roma, IT

Equation of state theories for sorption thermodynamics in glassy and rubbery polymers
• G. MENSITIERI, University of Napoli Federico II, Napoli, IT

Entangled polymers: spontaneous knotting and its effects on kinetics and mechanics
• C. MICHELETTI, SISSA University of Trieste, IT

Hybrid particle-field simulations of polymers and soft materials
• G. MILANO, Yamagata University, Yamagata, JP

Colloidal glasses and gels in real space
• C.P. ROYALL, University of Bristol, UK

Glass and jamming physics in the rheology of soft materials
• P. SOLLICH, University of Gottingen, DE

On growth and form
• H.E. STANLEY, Boston University, Boston, MA, US

Structure and properties of disordered hyperuniform networks and soft matter systems
• S. TORQUATO, Princeton University, Princeton, NJ, US

Specific heat anomaly and liquid-liquid long-rang fluctuation in hydrophobic confined water
• L. XU, Peking University, Beijing, CN

Multiscale materials modelling at the mesoscale
• S. YIP, Massachusetts Institute of Technology, Cambridge, MA, US

In silico synthesis of microgels
• E. ZACCARELLI, ISC-CNR, Roma, IT

PURPOSE OF THE COURSE

The purpose of the Course is that of giving a balanced view of fundamental topics in the realm of polymer and soft materials. Dynamical behavior and thermodynamics of these systems will be addressed spanning from basic to advanced aspects. The Course will consist of comprehensive lectures by leading experts in the Soft Matter field. In addition, the program will include specialized seminars by invited speakers. Subjects of lectures and seminars will include polymeric and biopolymeric systems, soft glassy materials like microgels and colloidal suspensions, nanoconfined and glassy systems, covering a broad spectrum of experimental, numerical and theoretical approaches. The Course is mainly directed at graduate students, postdoctoral researchers and junior scientists working at universities and research institutions. Overall, the Course will provide a broad overview of the field, including the most recent ideas in theory and experiment, as well as a critical discussion of the problems that are currently attracting the attention of the researchers. By gathering participants with different specialized backgrounds the Course also aims at cross- fertilization of ideas that could advance the state of the field.

APPLICATIONS

Person wishing to attend the Course should send a letter to:

Professor Francesco Greco, *francesco.greco@unina.it*
Professor Giuseppe Mensitieri, *giuseppe.mensitieri@unina.it*
Professor Francesco Mallamace, *mallamac@unime.it*

PLEASE NOTE

Participants must arrive in Erice on July 9, no later than 2 p.m.

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 other activities of the "ETTORE MAJORANA" FOUNDATION AND CENTRE FOR SCIENTIFIC CULTURE can be found on the WWW at the following address:
http://www.ccsem.infn.it

F. GRECO – G. MENSITIERI
DIRECTORS OF THE COURSE

R. CAR – F. MALLAMACE – L.G.M. PETTERSON
DIRECTORS OF THE SCHOOL

A. ZICHICHI
PRESIDENT EMFCSC