



## CORSO DI DOTTORATO IN SCIENZE E TECNOLOGIE DELLA CHIMICA E DEI MATERIALI

### SUMMARY OF THE EDUCATIONAL ACTIVITY

#### OPENING LECTURE (2024):

SPEAKER	UNIVERSITY/RESEARCH CENTER/COMPANY	TITLE/TOPIC	DATE	PROPOSER
Elena Cattaneo	Università di Milano	The scientist's privilege and ethical responsibility: navigating the frontiers of knowledge	February 16, 2024	R. Riva

**TYPE "A" COURSES – 2024 (in update)**

TEACHER	UNIVERSITY/RESEARCH CENTER/COMPANY	TITLE/TOPIC	DATE	PROPOSER
Fabio De Moliner	University of Edinburg (UK)	Bioimaging: biology seen through the eyes of chemistry	September 25, 2024	A. Basso
Maria Chiara Monti	Università di Napoli Federico II	Proteomics-based approach in drug discovery	May 16, 2024	A. Bisio
Andrea Cafarelli	Scuola Superiore Sant'Anna, Pisa	Stimuli-responsive materials for regenerative medicine and drug delivery	May 23, 2024	C. Canale
Christoph Schick	Universität Rostock (D)	Developments and applications of high-speed scanning calorimetry	April 15 and 16, 2024	D. Cavallo
Mauro Lo Conte	Novo Nordisk Research Center Seattle, Seattle (USA)	Beyond Small Molecules: New Chemical Modalities in Drug Discovery	September 12-13, 2024	L. Moni
Maria Lucia Curri	Università di Bari	Photocatalytic nanomaterials for sustainable solutions of complex environmental challenges	April 8 and 9, 2024	D. Peddis
Neil Telling	University of Keele (UK)	Magnetic nanoparticles for hyperthermia	April 10 and 11, 2024	T. Pellegrino
Daniele Ragno	Università di Ferrara	Flow chemistry: main principles and applications	June 26, 2024	R. Riva
Marco Ranocchiari	Paul Scherrer Institut, Villigen (CH)	Synthesis, structure, and applications of metal-organic frameworks	To reschedule	R. Riva
Lorenzo degli Esposti	Istituto di Scienza, Tecnologia e Sostenibilità per lo Sviluppo dei Materiali Ceramici (ISSMC CNR), Faenza	<ul style="list-style-type: none"> <li>▪ <u>Module 1</u>: What means studying a nanomaterial: challenges of nano-size</li> <li>▪ <u>Module 2</u>: Biomineralization – formation of crystals by living organisms and what we can learn for materials science</li> </ul>	March 14 and 15, 2024	P. Solokha
Emanuele Boero	Huvepharma Italia s.r.l., Garesio	Developing a new drug: business decision making and industrialization of a medicinal chemistry process	April 23, 2024	M. Tonelli

### TYPE "B" COURSES – 2024

COURSE	CFU	TEACHERS	ENGLISH
Aspects of soft matter	2	A. Relini (UniGe)	On request
Atomic force microscopy, theory and practice	2	M. Salerno (UniGe)	YES
Catalysts and adsorbents	2.5	E. Finocchio (UniGe), G. Garbarino (UniGe)	YES
Design of magnetic nano-architecture	2	D. Peddis (UniGe)	On request
Experimental design	2	F. Ardini (UniGe), B. Benedetti (UniGe)	YES
Fundamentals of scanning electron microscopy	2	P. Riani (UniGe)	YES
Fundamentals of spectral imaging	2	C. Malegori (UniGe), P. Oliveri (UniGe)	YES
Innovative pharmaceutical dosage forms: preparation and control methods	2	S. Baldassari (UniGe), G. Caviglioli (UniGe), G. Zuccari (UniGe), E. Russo (UniGe)	YES
Instrumental techniques for trace elements determination in pharmaceuticals, inorganic nanomaterials, food products, environmental samples, and <i>in vivo</i> biokinetics evaluation	2	G. Drava (UniGe), V. Voliani (UniGe)	On request
Introduction to functional ceramic materials. Structure, properties, preparation and applications	2	V. Buscaglia (CNR)	YES
Introduction to polymer physical chemistry and characterisation techniques	2	N. Tirelli (IIT)	YES
Mathematical methods for chemistry	2	M. Ottonelli (UniGe)	Slides in English
Optical properties of materials	2	F. Bisio (UniGe), M. Canepa (UniGe), M. Magnozzi (UniGe)	YES
Organic materials for photonics	2	D. Comoretto (UniGe)	YES
Organic photochemistry	2	A. Basso (UniGe)	YES
Principal plants used in phytocosmetics and their constituents	2	A. Bisio (UniGe)	YES
Surface science	3	L. Vattuone (UniGe)	YES
The ideal synthesis nowadays: lessons from the synthetic chemist Nature	2	C. Lambruschini (UniGe), L. Moni (UniGe)	YES
Theory of crystalline solids	3	S. Artyukhin (IIT)	YES

**TYPE "B" COURSES – 2025 (to be confirmed)**

<b>COURSE</b>	<b>CFU</b>	<b>TEACHERS</b>	<b>ENGLISH</b>
Crystalline solids: electronic correlations, instabilities and order	2	S. Artyukhin (IIT)	YES
Design and synthesis of protein-kinase inhibitors as anticancer agents	2	S. Schenone (UniGe), M. Tonelli (UniGe)	YES
DNA nanotechnology	2	D. Garoli (IIT)	YES
Drug discovery: an introduction to the process leading to new small-molecule drugs	2	A. Armirotti (IIT), T. Bandiera (IIT), F. Bertozzi (IIT), M. De Vivo (IIT), S. Giroto (IIT), B. Grimaldi (IIT), D. Russo (IIT), R. Scarpelli (IIT), M. Veronesi (IIT)	YES
Elementary electronic structure of solids	3	L. Manna (IIT)	YES
INN and IUPAC nomenclature of organic drugs	2	G. Grossi (UniGe)	On request
Introduction to nanophotonics and nanofabrication	3	M. C. Giordano (UniGe)	YES
Molecular markers of food quality and genuineness	2	R. Boggia (UniGe), F. Turrini (UniGe)	On request
Multivariate analysis of chemical data	3	M. Casale (UniGe), C. Malegori (UniGe), P. Oliveri (UniGe)	On request
Patent and bibliographic databases searching in medicinal chemistry	2	C. Brullo (UniGe), P. Fossa (UniGe)	YES
Perspectives on bioinorganic chemistry	2	S. De Negri (UniGe)	YES
Polymeric nanocomposites	2	O. Monticelli (UniGe)	YES
Process intensification	3	A. Servida (UniGe)	YES
Science at Large Scale Facilities: Neutron and Synchrotron Light sources	2	A. Martinelli (CNR-SPIN)	YES
Single crystal diffraction at work	2	P. Solokha (UniGe)	YES
The Rietveld method: fundamentals and applications	2	C. Artini (UniGe)	On request
Water soluble nanoparticles	2	T. Pellegrino (IIT)	YES

**TYPE "F" COURSES – (2024 and 2025). These courses will be followed during the first year**

<b>COURSE</b>	<b>CFU</b>	<b>TEACHERS</b>	<b>ENGLISH</b>
Materials characterization 1	1	M. Lorenzoni (IIT), L. Pasquale (IIT), S. Dante (IIT), L. Ceseracciu (IIT)	YES
Materials characterization 2	1	M. Prato (IIT), L. Pasquale (IIT), S. Dante (IIT), Dr. Luca Goldoni (IIT)	YES
Nanomaterials and nano heterostructures: colloidal synthesis and chemical transformations	1	L. De Trizio (IIT)	YES
Advanced electron microscopy for materials science	1	R. Brescia (IIT), G. Divitini (IIT), I. Ivanov (IIT)	YES