

17/04/2023

## TEACHING ACTIVITY FOR PhD COURSES IN INDUSTRIAL CHEMISTRY, AA 2022-2023

COORDINATOR Prof.ssa Dominique Marie Roberto

	Title	Date	Hour	Room	CFU
<b>Coordinator: Roberto Dominique</b>  <b>Lecturers:</b> <b>Leodux-Rak Isabelle (Paris Saclay) (a)</b> <b>Santo di Bella (b)</b> <b>Tessore Francesca (c)</b> <b>Palanisami Nallasamy (d)(e)</b>	<b>Molecular engineering for quadratic nonlinear optics: the role of metal complexes</b>  The emergence of Molecular Photonics at the cross-road of physics, chemistry and device engineering is triggered by the increasing demands in the domain of high bit rate telecommunications and of sensor applications. The wealth of molecular structures and the exploitation of their functional and structural flexibility open-up thoroughly renewed horizons in this domain. In this course we will report on the interest of metal complexes in molecular engineering for quadratic nonlinear optics.	(a) 03-11-2022 (b) 27-02-2023 (c) 09-03-2023 (d) 28-02-2023 (e) 28-02-2023	14:00-16:00 10.00-12:00 14:30-16:30 10:00-12:00 14:00-16:00	G16 on-line on-line on-line on-line	2
<b>Coordinator: Roberto Dominique</b>  <b>Lecturers:</b> <b>Fondazione Sodalitas (20 h)</b> <b>Fanoni Aurelio</b>  <b>For third year PhD students in Chemistry and in Industrial Chemistry. Recommended</b>	<b>Youth and Enterprise</b>  Course for third-year PhD students. It is an orientation course with exercises and laboratory activities, designed and organized by the Sodalitas Foundation. The course is based on the centrality of the person; it is oriented in the perspective of Social Responsibility and Sustainability, according to the European guidelines of MIUR, with the aim of enhancing vocations and attitudes that distinguish the excellence of young people, as an added value of cross-skills. The method is based on a guided path of progressive experience in the logic of the world of work, through interactive, laboratory, relational modes, support films, company testimony and simulations.	16-01-2023 17-01-2023 18-01-2023 19-02-2023	09:00-14:00 09:00-14:00 09:00-14:00 09:00-14:00	on-line	4
<b>Coordinator: Benaglia Maurizio</b>  <b>Lecturers:</b> <b>Benaglia Maurizio</b> <b>Pirola Carlo</b> <b>Proserpio Davide</b>	<b>Literature and library research in industrial chemistry</b>  Course on the literature in industrial chemistry. The student learns to read and comment in a critical manner, articles in the field of industrial chemistry, in particular in organic (with Prof. Benaglia), inorganic (with Prof. Proserpio) and physical chemistry (with Prof. Pirola).	February  <b>Date to be decided with the Professor</b>			2

<p><b>Coordinator: Bianchi Claudia</b></p> <p><b>Lecturers:</b></p> <p><b>Bianchi Claudia (a)(b)</b></p> <p><b>Dotelli Giovanni (POLIMI) (c)</b></p>	<p><b>Life Cycle Assessment methodology</b></p> <p>Course on the environmental impacts of products and processes considering their life cycle from cradle to grave</p>	<p>(a) 02-02-2023</p> <p>(b) 03-02-2023</p> <p>(c) 06-02-2023</p>	<p>13.30-16.30</p> <p>13.30-16.30</p> <p>13.30-17.30</p>	<p>Aula 109</p> <p>Aula 202</p> <p>Aula 202</p>	<p>2</p>
<p><b>Coordinator: Colombo Valentina</b></p> <p><b>Lecturers:</b></p> <p><b>Stucchi Marta (a)</b></p> <p><b>Grell Toni (b)</b></p> <p><b>Braglia Luca (c) (d)</b></p>	<p><b>Novel applications in heterogeneous catalysis for porous materials: principles and operando X-ray based characterization</b></p> <p>The study at the atomic level of reactivity and reaction mechanisms in heterogeneous catalysts is the key to the design and development of the catalysts of the future. The course aims to provide students with the fundamentals and applications in the catalytic field of porous materials such as supported carbons, zeolites and metal-organic frameworks, focusing on cutting-edge techniques for the characterization of active centers and of the electronic and crystallographic structure of the materials in reaction conditions.</p>	<p>(a) 29-03-2023</p> <p>(b) 30-03-2023</p> <p>(c) 31-03-2023</p> <p>(d) 31-03-2023</p>	<p>14:00-17:00</p> <p>14:00-17:00</p> <p>10:00-12:00</p> <p>14:30-16:30</p>	<p>Aula 400</p> <p>Aula 100</p> <p>Aula 303</p> <p>Aula 303</p>	<p>2</p>
<p><b>Coordinator: Roberto Dominique</b></p> <p><b>Lecturers:</b></p> <p><b>Ghezzi Serena (12 h)</b></p>	<p><b>Graphic Communication of Scientific Research to elevate your Papers</b></p> <p>The course goal is to learn graphic communication of scientific research. The main topic is teaching the students how to make the correct graphic communication in order to make more appealing their papers.</p>	<p>17-04-2023</p> <p>21-04-2023</p> <p>27-04-2023</p>	<p>09:00-13:00</p> <p>14:00-18:00</p> <p>09:00-13:00</p>	<p>on-line</p>	<p>2</p>
<p><b>Coordinator: Speranza Giovanna</b></p> <p><b>Lecturers:</b></p> <p><b>Riva Sergio (a)</b></p> <p><b>Robescu Simona Marina (b)</b></p> <p><b>Rabuffetti Marco (c)</b></p> <p><b>Alcantara Andres R. (d)</b></p>	<p><b>Biocatalysis for sustainable chemistry</b></p> <p>In recent years, biocatalysis has been recognized as a key enabling technology in many industrial sectors as it answers the increasing demand for highly selective, safe, and sustainable processes. Moreover, enzyme-based catalysis offers both economic and environmental advantages over traditional chemical catalysis and fits into the principles and metrics of green chemistry.</p> <p>At the end of the course, the student will have learned the basics of biocatalysis as well as of green chemistry and sustainable development. Moreover, through the discussion of selected examples, students will address specific technical issues related to the optimization of biocatalytic processes, from enzyme selection to product isolation.</p>	<p>(a)16-05-2023</p> <p>(b)17-05-2023</p> <p>(b,c)18-05-2023</p> <p>(c)31-05-2023</p> <p>(d)05-06-2023</p>	<p>10:30-12:30</p> <p>10:30-12:30</p> <p>10:30-12:30</p> <p>10:30-12:30</p> <p>10:00-12:00</p>	<p>Aula 101</p> <p>Aula 101</p> <p>Aula 206</p> <p>Aula 101</p> <p>Aula 101</p>	<p>2</p>

<p><b>Coordinator: Caselli Alessandro</b></p> <p><b>Lecturers:</b></p> <p><b>Caselli Alessandro (a)</b></p> <p><b>Maggioni Daniela (b)</b></p> <p><b>Zakutna Dominika – Dep. of Inorganic Chemistry, Charles University (c)</b></p> <p><b>Memboeuf Antony - UFR Sciences, Université de Brest (d)</b></p>	<p><b>Advanced organometallic characterization methods</b></p> <p>The course aims to train students on the most commonly used analytical techniques for the detailed study and characterization of organometallic compounds and / or relevant intermediates in catalytic processes. In particular, the use of advanced spectroscopic techniques such as IR, Raman, UV and spectrometry techniques such as EPR (paramagnetic complexes and radical intermediates), NMR and mass analysis (structural characterization of reaction intermediates) will be covered by experts in the field.</p>	<p>(a)19-05-2023</p> <p>(b)22-05-2023</p> <p>(c)29-05-2023</p> <p>(c)30-05-2023</p> <p>(d)06-06-2023</p>	<p>14:30-16:30</p> <p>14:30-16:30</p> <p>14:30-16:30</p> <p>14:30-16:30</p> <p>10:00-12:00</p>	<p>Aula 101</p> <p>Aula 101</p> <p>Aula 101</p> <p>Aula 101</p> <p>on-line</p>	<p>2</p>
<p><b>Coordinator: Pieraccini Stefano</b></p> <p><b>Lecturers:</b></p> <p><b>Pieraccini Stefano</b></p> <p><b>Cappelletti Giuseppe</b></p> <p><b>Chiarello Gianluca</b></p> <p><b>Ido Braslavsky - The Hebrew University of Jerusalem</b></p>	<p><b>Smart nanomaterials for cryoconservation of tissues and organs: design, preparation and characterization</b></p> <p>The course will introduce the homogeneous nucleation theory and its application to the liquid-solid phase transition for water. The properties and the action mechanism of natural antifreeze proteins will be described, and synthetic antifreeze nanomaterials will be also discussed, with emphasis on their design, synthesis and characterization</p>	<p>05-06-2023</p> <p>06-06-2023</p> <p>07-06-2023</p> <p>08-06-2023</p> <p>09-06-2023</p>	<p>14:30-16:30</p> <p>14:30-16:30</p> <p>09:30-11:30</p> <p>14:30-16:30</p> <p>14:30-16:30</p>	<p>Aula G16</p> <p>Aula G16</p> <p>Aula G16</p> <p>Aula 109</p> <p>Aula 109</p>	<p>2</p>
<p><b>Coordinator: Cariati Elena</b></p> <p><b>Lecturers:</b></p> <p><b>Facchetti Antonio (15 h)</b> <i>Department of Chemistry and the Materials Research Center, Northwestern University - USA</i></p>	<p><b>Design, synthesis, and properties of organic semiconductors; Applications from displays to bio-electronics</b></p> <p>Organic semiconductors are a class of electronic materials that are capable of transporting charges, electrons (negative) and/or positive (holes), and where the carrier concentration can be varied considerably by application of a bias, shining light, applying a temperature gradient etc. The mechanism of charge transport in most of these “soft” solids varies considerably on the molecular structure, solid-state organization and integration into devices, however, it is typically dominated by defects on the contrary of the highly textured inorganic semiconductors. The chemical structure of these materials may vary based on the desired functionality and ultimate device application. However, two major classes of these materials have emerged: 1) Small molecules and 2) Polymers. Each class has its own advantages, drawbacks, and thin-film processing conditions. In this course, I will describe basic concepts of the molecular design, synthetic strategies, processing methodologies and solid-state properties of these two classes of compounds. Emphasis will be given of the chemical aspects affecting design-property-application correlations. Furthermore, since fabrication of devices needs other electronic materials, I will introduce basic concepts regarding these other materials, their design and properties. Finally, I will describe how these materials can be implemented successfully in various emerging, established and revolutionary applications ranging from simple displays, circuits, and sensors to bio-electronics</p>	<p>02-05-2023</p> <p>03-05-2023</p> <p>09-05-2023</p> <p>10-05-2023</p> <p>26-06-2023</p> <p>27-06-2023</p> <p>28-06-2023</p>	<p>14:30-16:30</p> <p>14:30-16:30</p> <p>14:30-16:30</p> <p>14:30-16:30</p> <p>14:30-16:30</p> <p>14:30-16:30</p> <p>08:30-11:30</p>	<p>Aula 101</p> <p>Aula 101</p> <p>Aula 303</p> <p>Aula 101</p> <p>Aula 109</p> <p>Aula 109</p> <p>Aula 101</p>	<p>3</p>