



COST Action CA20129  
**MultIChem**



**The Second Conference**  
*"Multiscale Irradiation and Chemistry  
Driven Processes and Related Technologies"*

**MultIChem 2023**

**CONFERENCE PROGRAM**

Vila Lanna  
Prague, Czech Republic  
April 26-28, 2023

<https://www.jh-inst.cas.cz/multichem/>



*" Multiscale Irradiation and Chemistry Driven Processes and Related Technologies "*

**MultiChem 2023**

Vila Lanna Prague, Czech Republic  
April 26-28, 2023

**Wednesday, April 26**

10 <sup>00</sup> – 14 <sup>00</sup>	Participants registration
12 <sup>30</sup> – 14 <sup>00</sup>	Lunch
14 <sup>00</sup> – 14 <sup>10</sup>	<b>MultiChem 2023 Opening</b>
	<b><u>Afternoon session I: Irradiation-driven transformations of molecular systems</u></b> (Chair: Alexey Verkhovtsev)
14 <sup>10</sup> – 14 <sup>40</sup>	<b>Andrey Solov'yov</b> , MBN Research Center, Frankfurt am Main, Germany <i>The fifth release of MBN Explorer and MBN Studio: advances and challenges in multiscale computational modeling</i>
14 <sup>40</sup> – 15 <sup>10</sup>	<b>Nigel Mason</b> , University of Kent, Canterbury, United Kingdom <i>Solid state chemistry in astronomy – A new age</i>
15 <sup>10</sup> – 15 <sup>40</sup>	<b>Brendan Dromey</b> , Queen's University Belfast, United Kingdom <i>Narrow energy spread proton beams from a laser driven accelerator for high precision spatiotemporal measurements of ion damage in matter</i>
15 <sup>40</sup> – 16 <sup>00</sup>	Coffee break
	<b><u>Afternoon session II: Electron interactions with nano- and biomolecular systems</u></b> (Chair: David Field)
16 <sup>00</sup> – 16 <sup>30</sup>	<b>Miloš Hrabovský</b> , TESCAN, Czech Republic <i>Automation of FIB-SEM process and open-access control of nanopatterning</i>
16 <sup>30</sup> – 17 <sup>00</sup>	<b>Stefan Denifl</b> , Institute for Ion Physics & Applied Physics, University of Innsbruck, Austria <i>Exploring reaction pathways of electron induced DNA damage</i>
17 <sup>00</sup> – 17 <sup>20</sup>	<b>Felipe Ferreira da Silva</b> , Universidade NOVA de Lisboa, Caparica, Portugal <i>Electron interactions with astrochemical relevant molecules</i>
17 <sup>20</sup> – 17 <sup>40</sup>	<b>Mateusz Zawadzki</b> , Gdansk University of Technology, Gdansk, Poland <i>Experimental studies on electron collisions with fundamental molecular targets</i>
17 <sup>40</sup> – 19 <sup>30</sup>	<b>Roadmap discussion (ca. 20-25 min)</b> <b>Poster session</b>

**Thursday, April 27**

	<b><u>Morning session I: Ion interactions with biomolecular systems</u></b> (Chair: Hidetsugu Tsuchida)
09 <sup>00</sup> – 09 <sup>30</sup>	<b>Thomas Schlathölter</b> , Zernike Institute for Advanced Materials, University of Groningen, the Netherlands <i>Heavy ion collisions with gas-phase DNA</i>
09 <sup>30</sup> – 10 <sup>00</sup>	<b>Alicja Domaracka</b> , Centre de Recherche sur les Ions, les Matériaux et la Photonique, Normandie Université, Caen, France <i>Ions interacting with complex molecular systems: the effect of a surrounding environment</i>
09 <sup>00</sup> – 10 <sup>30</sup>	<b>Gérard Baldacchino</b> , Université Paris-Saclay, France <i>What chemistry in the Bragg peak of protons and carbon ions?</i>
10 <sup>30</sup> – 11 <sup>00</sup>	Coffee break
	<b><u>Morning session II: Irradiation-driven transformations of nano- and biomolecular systems</u></b> (Chair: Malgorzata Smialek-Telega)
11 <sup>00</sup> – 11 <sup>30</sup>	<b>Paola Bolognesi</b> , CNR-Istituto di Struttura Della Materia, Monterotondo, Italy <i>Photoionisation studies of dipeptides</i>
11 <sup>30</sup> – 12 <sup>00</sup>	<b>Aleksandar Milosavljević</b> , Synchrotron SOLEIL, Gif-Sur-Yvette, France <i>Near-edge x-ray absorption fine structure (NEXAFS) spectroscopy of protonated adenosine triphosphate molecule</i>
12 <sup>00</sup> – 12 <sup>30</sup>	<b>Alexey Verkhovtsev</b> , MBN Research Center, Frankfurt am Main, Germany <i>Quantum mechanical inputs for irradiation-driven molecular dynamics</i>
12 <sup>30</sup> – 14 <sup>00</sup>	Lunch
	<b><u>Afternoon session I: Irradiation-driven chemistry in nanofabrication processes</u></b> (Chair: Matija Zlatar)
14 <sup>00</sup> – 14 <sup>30</sup>	<b>Ilia Solov'yov</b> , Institute of Physics, Carl von Ossietzky University Oldenburg, Germany <i>Stochastic dynamics simulation of the focused electron beam induced deposition process</i>
14 <sup>30</sup> – 15 <sup>00</sup>	<b>Petra Swiderek</b> , Institute of Applied and Physical Chemistry, University of Bremen, Germany <i>Electron-driven chemistry of NH<sub>3</sub>: New insights from molecular synthesis and fundamental processes of nanofabrication</i>
14 <sup>00</sup> – 15 <sup>30</sup>	<b>Anne Lafosse</b> , Institute of Molecular Sciences of Orsay, Université Paris-Saclay, France <i>Quantifying non-thermal desorption from molecular ices - Comparative study of photon and electron irradiation in the valence- and core-shell energy ranges</i>
15 <sup>30</sup> – 16 <sup>00</sup>	Coffee break
	<b><u>Afternoon session II: Nanofabrication with focused particle beams</u></b> (Chair: Felipe Fantuzzi)
16 <sup>00</sup> – 16 <sup>30</sup>	<b>Jose Maria De Teresa</b> , University of Zaragoza, Spain <i>Metallic structures grown by focused ion beam decomposition of condensed precursor layers and of metallorganic films</i>
16 <sup>30</sup> – 17 <sup>00</sup>	<b>Lukas Seewald</b> , Institute of Electron Microscopy and Nanoanalysis, Graz University of Technology, Austria <i>Recent progress in functional nanofabrication via 3D Nanoprinting</i>
17 <sup>00</sup> – 17 <sup>30</sup>	<b>Lisa McElwee-White</b> , University of Florida, USA <i>(<math>\eta^3</math>-allyl)Ru(CO)<sub>3</sub>X Precursors: From FEBID to photoassisted area selective deposition</i>

19 <sup>30</sup> – 22 <sup>00</sup>	Conference dinner
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**Friday, April 28**

	<b><u>Morning session I: Biomedical and technological applications of radiation</u></b> (Chair: Michael Hausmann)
09 <sup>00</sup> – 09 <sup>30</sup>	<b>Andrew Nisbet</b> , Department of Medical Physics & Biomedical Engineering, University College London, United Kingdom <i>Current challenges and future developments in photon beam treatment planning</i>
09 <sup>30</sup> – 10 <sup>00</sup>	<b>Richard Amos</b> , Translational Proton Therapy Physics, University College London, United Kingdom <i>Planning and delivery of ion beam cancer therapy: Limitations of contemporary clinical practice</i>
10 <sup>00</sup> – 10 <sup>30</sup>	<b>Revaz Shandize</b> , Kutaisi International University, Georgia <i>New hadron therapy center in Kutaisi, Georgia</i>
10 <sup>30</sup> – 11 <sup>00</sup>	<b>Alexander Gerbershagen</b> , The University Medical Center Groningen (UMCG), Groningen, the Netherlands <i>UMCG - from radiobiology to treatment planning</i>
11 <sup>00</sup> – 11 <sup>20</sup>	Coffee break
	<b><u>Morning session II: Mechanisms of nanoparticle radiosensitization</u></b> (Chair: Marc Benjamin Hahn)
11 <sup>20</sup> – 11 <sup>50</sup>	<b>Martin Falk</b> , Institute of Biophysics, Czech Academy of Sciences, Brno, Czech Republic <i>Is there a simple explanation for metal nanoparticle-mediated cell radiosensitization?</i>
11 <sup>50</sup> – 12 <sup>20</sup>	<b>Olivier Tillement</b> , NH TherAguix, France <i>Chelating bio-polymer for metal extraction: from concept to clinic</i>
12 <sup>20</sup> – 12 <sup>45</sup>	<b>Cécile Sicard-Roselli</b> , University Paris Saclay, France <i>Do we always want nanoparticles to enhance radical production?</i>
12 <sup>45</sup> – 13 <sup>00</sup>	<b>Yasmine Sebti</b> , University of Sorbonne, Paris, France <i>Hafnium oxide nanoparticles as computed tomography contrast agent</i>
13 <sup>00</sup> – 14 <sup>00</sup>	Lunch
	<b><u>Afternoon session I: Radiation-induced chemistry</u></b> (Chair: Juraj Fedor)
14 <sup>00</sup> – 14 <sup>30</sup>	<b>Stanislav Kadlec</b> , Eaton European Innovation Center, Czech Republic <i>Radiation-induced effects in power distribution industry - switching arcs, streamers and breakdown in low and medium voltage devices</i>
14 <sup>30</sup> – 15 <sup>00</sup>	<b>Tomáš Homola</b> , Roplass, Czech Republic <i>Atmospheric pressure plasma sources for rapid treatment of nano and bio surfaces</i>
15 <sup>00</sup> – 15 <sup>20</sup>	<b>Majdi Hochlaf</b> , Université Gustave Eiffel, Champs-sur-Marne, France <i>Irradiation-driven formation of abiotic O<sub>2</sub> from SO<sub>2</sub></i>
15 <sup>20</sup> – 15 <sup>30</sup>	<b>MultiChem 2023 Closing</b>
15 <sup>30</sup> – 15 <sup>45</sup>	Coffee break
15 <sup>45</sup> – 17 <sup>00</sup>	<b><u>MultiChem Management Committee Meeting</u></b>