

**COST Action CA20129 MultiChem
Meeting of Working Groups 1&2**

3-5 September 2025, ATLANTIC Hotel Sail City, Bremerhaven, Germany

Wednesday, September 3

10 ⁰⁰ – 10 ¹⁵	Workshop opening: Andrey Solov'yov
10 ¹⁵ – 10 ⁴⁵	<u>Morning session I, Chair: Werner Lauth</u> Andrey Solov'yov , MBN Research Center, Frankfurt am Main, Germany <i>Advances in Horizon Europe EIC-Pathfinder Project TECHNO-CLS: "Emerging technologies for crystal-based gamma-ray light sources"</i>
10 ⁴⁵ – 11 ¹⁵	Andrei Korol , MBN Research Center, Frankfurt am Main, Germany <i>Atomistic modelling of crystal-based light sources: new results</i>
11 ¹⁵ – 11 ³⁰	Coffee break
11 ³⁰ – 12 ⁰⁰	<u>Morning session II, Chair: Andrey V. Solov'yov</u> Werner Lauth , Institute of Nuclear Physics, University of Mainz, Mainz, Germany <i>First observation of undulator radiation in periodically bent diamond crystals</i>
12 ⁰⁰ – 12 ³⁰	Hartmut Backe , Institute of Nuclear Physics, University of Mainz, Mainz, Germany <i>The cumbersome climb to the peak, and a critical look around</i>
12 ³⁰ – 13 ⁰⁰	Maykel Marquez Mijares , Instituto Superior de Tecnologías y Ciencias Aplicadas, Universidad de La Habana, Cuba (on behalf of G. Rojas-Lorenzo, P. Ibañez-Almaguer, J. Robayo-Soneira, A.V. Solov'yov) <i>Positron channeling in quasi-mosaic bent crystals: Atomistic simulations vs. experiment</i>
13 ⁰⁰ – 14 ³⁰	Lunch
14 ³⁰ – 15 ⁰⁰	<u>Afternoon session I, Chair: Andrei Korol</u> Thu Nhi Tran Caliste , ESRF, France <i>Periodically boron-doped diamond to achieve a crystal undulator</i>
15 ⁰⁰ – 15 ³⁰	Matthew Dickers , University of Kent, Canterbury, United Kingdom <i>Structural effects of boron doping in diamond crystals for gamma-ray light-source applications: Insights from molecular dynamics simulations.</i>
15 ³⁰ – 16 ⁰⁰	Riccardo Negrello , University of Ferrara, Italy <i>Crystalline undulator via Si₃N₄ surface patterning: A case study from mechanical design to radiation source with 10 GeV positrons</i>
16 ⁰⁰ – 16 ³⁰	Coffee break
16 ³⁰ – 17 ⁰⁰	<u>Afternoon session II, Chair: Nigel Mason</u> Nektarios Papadogiannis , Institute for Plasma Physics and Lasers, Hellenic Mediterranean University, Heraklion, Greece <i>Progress on Laser Wakefield Acceleration of electrons and positrons in ultrarelativistic regime</i>
17 ⁰⁰ – 17 ³⁰	Konstantinos Kaleris , Institute for Plasma Physics and Lasers, Hellenic Mediterranean University, Heraklion, Greece <i>Acoustic Crystalline Undulators for tunable γ-ray generation: technical challenges and opportunities</i>
17 ³⁰ – 18 ⁰⁰	Manos Kaniolakis-Kaloudis , Institute for Plasma Physics and Lasers, Hellenic Mediterranean University, Heraklion, Greece (on behalf of N.A. Papadogiannis, Y.Orphanos, M.Bakarezos, M. Tatarakis, K. Kaleris) <i>Characterization of multi-10-MHz Acoustic Waves in Crystalline Silicon for ultrarelativistic positron undulation</i>

Thursday, September 4

09 ³⁰ – 09 ⁵⁰	<u>Morning session I, Chair: Nektarios Papadogiannis</u> Laura Bandiera , Istituto Nazionale di Fisica Nucleare, Ferrara, Italy (online) <i>Experimental studies at CERN on crystalline undulator</i>
09 ⁵⁰ – 10 ²⁰	Vincenzo Guidi , University of Ferrara, Italy <i>Observation of fine structure in channeling of 530-MeV positrons in bent crystals</i>
10 ²⁰ – 10 ⁴⁰	Sara Casalbuoni , XFEL, Hamburg, Germany (online) <i>European XFEL undulator systems</i>
10 ⁴⁰ – 11 ⁰⁰	Winfried Decking and Francois Lemery , DESY, Hamburg, Germany (online) <i>Electron beams at the European XFEL</i>
11 ⁰⁰ – 11 ³⁰	David Alesini , Laboratori Nazionali di Frascati LNF, INFN, Italy (online) <i>INFN-ACCELERATORS networking program and INFN-LNF activities for the installation of the SSRIP accelerator at ELI-NP (Romania)</i>
11 ⁰⁰ – 11 ³⁰	Coffee break
11 ³⁰ – 12 ⁰⁰	<u>Morning session II, Chair: Thu Nhi Tran Caliste</u> Daide Valzani, Davide De Salvador , University of Padova, Padova, Italy <i>Recent developments in germanium-based gamma undulators using pulsed laser melting</i>
12 ⁰⁰ – 12 ³⁰	David Eon , CNRS, Grenoble, France <i>Management of periodic diamond doping during growth</i>
12 ³⁰ – 13 ⁰⁰	Lutz Kirste and Patrik Stranak , Fraunhofer Institute, Germany <i>ToF-SIMS analysis: Applications in III-V semiconductors and diamond materials</i>
13 ⁰⁰ – 14 ³⁰	Lunch
14 ³⁰ – 15 ⁰⁰	<u>Afternoon session I: Chair: Vincenzo Guidi</u> Koen de Hantsetters , Almax easyLab bv, Belgium, <i>Precision diamond cutting and polishing at Almax easyLab: Enabling advanced scientific applications</i>
15 ⁰⁰ – 15 ³⁰	Dmitry Semchenko , FTDiam, New York, USA <i>Advanced HPHT single crystal diamond growth method: state of the art, current challenges and technology development prospects</i>
15 ³⁰ – 16 ⁰⁰	Muhammad Hamza , Micro Nano Facility - Sensors and Devices Centre – Fondazione Bruno Kessler, Trento, Italy <i>Studies on realization of high mechanical stressed materials for bending and particle channeling applications</i>
16 ⁰⁰ – 16 ³⁰	Coffee break
16 ³⁰ – 17 ³⁰	Open discussion

Friday, September 5

09 ³⁰ – 11 ⁰⁰	<u>Morning session I: Open discussion of the MultiChem Consortium</u> <i>Research and development for future markets</i>
11 ⁰⁰ – 11 ³⁰	Coffee break
11 ³⁰ – 13 ⁰⁰	<u>Morning session II: Open discussion of the MultiChem Consortium</u> <i>Electron and ion irradiation-driven transformations in nanofabrication processes</i> <i>Discussion related to the COST Innovators Grant INDICO project</i>
13 ⁰⁰ – 14 ³⁰	Lunch
14 ³⁰ – 16 ⁰⁰	<u>Afternoon session I: Open discussion of the MultiChem Consortium</u> <i>Collisions with biomolecules and biomolecular systems</i> <i>Biomedical and technological applications of radiation</i>
16 ⁰⁰ – 16 ¹⁵	Workshop closing