

The Joint 28th AIRAPT and 60th EHPRG International Conference 2023

Programme

Wednesday 26 July 2023

Time	Room	Programme
8:30am to 9am	Lennox	Arrival Refreshments
9am to 9:50am	Lennox	Plenary II Crystele Sanloup: What does pressure-induced xenon chemistry tells us about planetary formation?
9:50am to 10:15am	Lennox	Morning Break
10:15am to 12:15pm	Lennox	Outer Planets and Exoplanets 1 (Session Chair: Crystele Sanloup) 10:15am - 10:45am Michelle Marshall: High-pressure phase transformations in ramp compressed SiO ₂ 10:45am - 11:00am Federica Coppari: X-ray diffraction and laser-driven ramp-compression of iron at TPa 11:00am - 11:15am Guillaume Morard: Study of liquid silicates using laser-driven shock compression 11:15am - 11:30am Yingwei Fei: Measurements of melting and pressure calibration at extreme pressure 11:30am - 11:45am Ashkan Salamat: Evidence of symmetry lowering in dense H ₂ O-ice above 300 GPa 11:45am - 12:00pm Tsutomu Mashimo: Measurement of Electrical Conductivity of Water and Heavy Water under Reverberating Shock Compression
	Lowther	Computational Studies of Elements (Session Chair: Andreas Hermann) 10:15am - 10:45am Zhi Li: Phase diagram of Iron at Earth's core conditions from deep learning 10:45am - 11:15am Roman Martonak: Study of polymerization of high-pressure nitrogen by ab initio molecular dynamics 11:15am - 11:45am John Tse: Electronic and Dynamical Properties and Polymorphism in the Solid and Liquid Phases of Compressed Sodium 11:45am - 12:00pm Wilfried B. Holzappel: Colorful systematic in the phase-diagrams of the elements
	Menteith	Synthesis and Properties of Novel Materials 2 (Session Chair: Paul Attfield) 10:15am - 10:45am Frederico Alabarse: Tuning thermal expansion and mechanical properties by high pressure insertion of guest molecules 10:45am - 11:15am Xiang Li: High-pressure Synthesis and Physical Properties of New Functional Materials 11:15am - 11:30am Francisco Javier Manjón: Structural, Vibrational and Electronic Behavior of Two GaGeTe Polytypes under Compression 11:30am - 11:45am Robin Turnbull: Pressure-induced phase transition and band-gap decrease in semiconducting Na ₃ Bi(IO ₃) ₆ 11:45am - 12:00pm Jun Zhang: A Ferrotoroidic Candidate with Well-Separated Spin Chains Synthesized at High Pressure

	Lammermuir	<p>Instrumentation and Techniques 1 (Session Chair: Konstantin Kamenev)</p> <p>10:15am - 10:45am Asami Sano-Furukawa: Recent developments in neutron diffraction experiments at high pressure and high temperature and application to Earth science</p> <p>10:45am - 11:00am Stefan Klotz: HYDROMET: A new facility to study hydrogen embrittlement of materials at up to 2 kbar H₂-pressure</p> <p>11:00am - 11:15am Kazuki Komatsu: Nano-polycrystalline diamond anvil cells for neutron diffraction up to 100 GPa</p> <p>11:15am - 11:30am Antonio M. dos Santos: In-Situ Pressure Control System for Neutron Scattering Cells: Applications for Low Temperature Physics</p> <p>11:30am - 11:45am Longjian Xie: Novel low-Z materials for combined X-ray and large-volume-press studies</p> <p>11:45am - 12:00pm Anna Makal: Polymorphism of Luminescent Materials at High-Pressure and Why Crystal Orientation Matters</p>
	Moffat	<p>Bio/Life Sciences and Soft Matter (Session Chair: Malcolm McMahon)</p> <p>10:15am - 10:45am Catherine Royer: Pressure-based mapping of protein conformational landscapes</p> <p>10:45am - 11:00am Arvi Freiberg: Towards the Understanding of Pressure-Induced Protein Phase Transitions</p> <p>11:00am - 11:15am Sebastian Pawlus: Is high-pressure an essential parameter for studying hydrogen-bonded materials? The case of monohydroxy alcohols</p> <p>11:15am - 11:30am Christian Roumestand: Does similar folds mean similar folding pathways? A comparative high-pressure NMR study of the unfolding of two Ig-fold modules</p> <p>11:30am - 11:45am Leonardo Chiappisi: Pressure-induced phase transition in polymer brushes: thermodynamic predictions and structural studies</p> <p>11:45am - 12:00pm Zhe Chen: Assessment of changes in enzyme activity, bioactive compound, sugar, and sensory attribute during the storage of high-pressure treated pre-packaged squash cubes</p>
12:15pm to 2pm	Lennox	Lunch
2pm to 4pm	Lennox	<p>Hydrides 4 (2pm to 4:15pm) (Session Chair: Ross Howie)</p> <p>2:00pm - 2:30pm Mikhail Eremets: High temperature conventional superconductivity</p> <p>2:30pm - 2:45pm Sam Cross: Superconductivity at 90 K in a lanthanum hydride film at 95 GPa</p> <p>2:45 pm - 3:00 pm Feng Du: Tunneling and Andreev spectroscopy studies on H₃S</p> <p>3:00pm - 3:15pm Hiranya Pasan Vindana Wadhurawa Mudiyansele: Observation of superconducting gap in Carbonaceous Sulfur Hydride</p> <p>3:15pm - 3:30pm Dmitrii Semenok: Non-Fermi-liquid behavior of superhydrides</p> <p>3:30pm - 3:45pm Sven Friedemann: Clean-limit superconductivity in Hydrogen Sulphide H₃S</p> <p>3:45pm - 4:00pm Zhongyan Wu: Superconductivity observed in yttrium lutetium ternary hydrides</p> <p>4:00pm - 4:15pm Guangtao Liu: The synthesis and property study of ternary high-temperature superconducting polyhydride under high pressure</p>

	Lowther	<p>Synthesis and Properties of Novel Materials 1 (Session Chair: Paul Attfield)</p> <p>2:00pm - 2:30pm Masashi Hasegawa: Synthesis, Crystal Growth and Physical Properties of High-Entropy Transition-Metal Nitrides under High-Pressures and High-Temperatures</p> <p>2:30pm - 3:00pm Hongbo Lou: Novel metallic glass states synthesized from extreme conditions</p> <p>3:00pm - 3:15pm Ben Heuser: Recovery of Nanodiamonds Produced in Laser-Driven Shock-Experiments</p> <p>3:15pm - 3:30pm Qiaoshi Zeng: Pressure-induced non-monotonic crossover of steady relaxation dynamics in a metallic glass</p> <p>3:30pm - 3:45pm Fabian Zimmerhofer: Crystal Structure, Characterization and Luminescence Properties of Mn(4+)-Doped K₃Nb₂O₄F₅</p> <p>3:45pm - 4:00pm Elena Stellino: High-Pressure Behavior of δ-Phase of Formamidinium Lead Iodide by Optical Spectroscopies</p>
	Menteith	<p>Equation of State 1 (Session Chair: Shanti Deemyad)</p> <p>2:00pm - 2:30pm Gilbert 'Rip' Collins: Converging to atomic pressures</p> <p>2:30pm - 3:00pm Jean-Paul Davis: High-precision room-temperature isotherm of Pt to over 400 GPa from ramp-compression experiments at the Z machine</p> <p>3:00pm - 3:15pm Richard Briggs: Ramp EOS measurements through phase transitions in tin up to 10 Mbar</p>
	Lammermuir	<p>Instrumentation and Techniques 3 (Session Chair : Mohammed Mezouar)</p> <p>2:00pm - 2:30pm Jon Eggert: Overview of TARDIS on NIF</p> <p>2:30pm - 3:00pm Emma McBride: Direct Measurement of Temperature from Laser Compressed Argon at the LCLS</p> <p>3:00pm - 3:15pm Georgios Aprilis: Measuring viscoelasticity inside the laser-heated Diamond Anvil Cell: Time-resolved Synchrotron Mössbauer Source spectroscopy</p> <p>3:15pm - 3:30pm Alexis Forestier: Fast and confocal Brillouin spectroscopy for the study of molecular systems at planetary interiors conditions</p> <p>3:30pm - 3:45pm Silvia Pandolfi: X-ray imaging of silicon under shock-compression at the LCLS: direct visualization of high-pressure phase nucleation and multi-wave kinetics</p> <p>3:45pm - 4:00pm Guoyin Shen: Multiple-axis diamond anvil cell: MDAC</p>
	Moffat	<p>Magnetic Materials 2 (Session Chair: Wenli Bi)</p> <p>2:00pm - 2:30pm Jing Song: Enhanced Magnetic Ordering in Lanthanide Metals under Extreme Pressure</p> <p>2:30pm - 2:45pm Matthew Clay: Neutron and X-ray Diffraction Study of Magnetic Ordering in Terbium at High Pressures and Low Temperatures</p> <p>2:45pm - 3:00pm Dominik Kurzydłowski: Phase transitions in compressed palladium trifluoride: how Pd(II)Pd(IV)F₆ becomes Pd(III)F₃</p> <p>3:00pm - 3:15pm Eduardo Poldi: Cobaltates as prospective Kitaev quantum spin liquids: atomic, electronic and magnetic responses of Na₃Co₂SbO₆ under pressure</p> <p>3:15pm - 3:30pm Ricardo Dos Reis: Understanding quantum materials by X-ray techniques under high pressure</p>
4pm to 4:30pm	Lennox	Afternoon Break

4:30pm to 6:30pm	Lennox	<p>Outer Planets and Exoplanets 2 (Session Chair: Michelle Marshall)</p> <p>4:30pm - 5:00pm Mungo Frost: Diamond Precipitation Dynamics from Hydrocarbons at Icy Planet Interior Conditions</p> <p>5:00pm - 5:15pm Ivan Oleynik: Carbon at Extremes: Discovery Science with Machine Learning, Exascale Computers and Experiment</p> <p>5:15pm - 5:30pm Wan Xu: Dense ammonia-containing composite systems in ice giants at high pressures</p> <p>5:30pm - 5:45pm Anshuman Mondal: Novel ammonia hydrates in the mid-mantle layers of icy (exo)planets</p> <p>5:45pm - 6:00pm Andreas Hermann: First principles calculations of light element mixtures at planetary</p> <p>6:00pm - 6:15pm Michael Stevenson: Chemistry of Low Z Mixtures at Icy Giant Conditions</p> <p>6:15pm - 6:30pm Martin Preising: Material properties of matter in Saturn's interior from ab initio simulations</p>
	Lowther	<p>Synthesis and Properties of Novel Materials 3 (Session Chair: Paul Attfield)</p> <p>4:30pm - 5:00pm Martin Bremholm: Discovery of a Seven-Coordinated CrSb₂ High Pressure Polymorph</p> <p>5:00pm - 5:15pm Julia-Maria Huebner: Host-guest framework compounds based on silicon by high-pressure high-temperature synthesis</p> <p>5:15pm - 5:30pm Takuya Sasaki: High-pressure synthesis and crystal chemistry of novel Cr-Ge compounds</p> <p>5:30pm - 5:45pm Timothy Strobel: Boron-Stabilized Carbon Clathrates</p>
	Menteith	<p>Electronic Transitions 1 (Session Chair: Amy Lazicki)</p> <p>4:30pm - 5:00pm Serge Desgreniers: Photoluminescence of the Negatively Charged Split Silicon-Vacancy Defect in Diamond at Low Temperature and High Pressure</p> <p>5:00pm - 5:15pm Keith Lawler: Density driven changes in electronic properties of the binary M(IV) oxides (M=Sn, Ge, Ru)</p> <p>5:15pm - 5:30pm Daniel Errandonea: High-pressure behavior of Mg(103)2</p> <p>5:30pm - 5:45pm Xiang Li: Complex electronic and magnetic properties in Fe₄O₅</p> <p>5:45pm - 6:00pm Jasmine Hinton: Experimentally observed and computationally confirmed electronic topological transition in cadmium</p> <p>6:00pm - 6:15pm Anjana Joseph: Pressure-induced phase transitions in 3D topological insulator TlBiTe₂</p> <p>6:15pm - 6:30pm Yang Ding: Electronic Structure of Quantum Materials at High Pressure</p>
	Lammermuir	<p>Static Studies of Elements 2 (Session Chair: Rachel Husband)</p> <p>4:30pm - 5:00pm Shanti Deemyad: Structural boundaries of lithium within its superconducting region</p> <p>5:00pm - 5:30pm Lisa Luhongwang Liu: Pressure induced phase transition, crystallization, and negative linear compressibility in crystalline and non-crystalline selenium</p> <p>5:30pm - 5:45pm Robin Fréville: Phase diagram of tin under extreme conditions</p> <p>5:45pm - 6:00pm Daniel Sneed: High-pressure structural systematics of Dy compressed in a neon pressure medium</p>

	Moffat	<p>Instrumentation and Techniques 4 (Session Chair : Alexander Soldatov)</p> <p>4:30pm - 4:45pm Simon Hunt: Continuous peak fit: a new algorithm for fitting spotty, noisy or incomplete x-ray diffraction data</p> <p>4:45pm - 5:00pm Thomas Meier: New Frontiers in nuclear magnetic resonance for high-pressure research and Geo-science</p> <p>5:00pm - 5:15pm Keizo Murata: High pressure medium, solidifying at pressure beyond 5 GPa at room temperature, and related topics</p> <p>5:15pm - 5:30pm Kirill Vlasov: A diamond anvil cell setup for dielectric measurements of aqueous and non-aqueous solutions up to 5 GPa and 1073 K</p> <p>5:30pm - 5:45pm Eyal Yahel: A novel differential thermal analysis measurements of phase transitions at high pressure and temperatures</p> <p>5:45pm - 6:00pm Andreas Zerr: Influence of elastic anisotropy on measured sound velocities of cubic solids</p>
7pm to 11pm	The National Museum of Scotland	<p>Reception Drinks and Conference Dinner</p> <p>The National Museum of Scotland, Chambers Street, Edinburgh, EH1 1JF (15 minute walk from the EICC)</p>