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

Programme

Tuesday 25 July 2023

Time	Room	Programme
8:15am to 8:45am	Lennox	Arrival Refreshments
8:45am to 9am	Lennox	**Bridgman Award Introduction**
9am to 9:50am	Lennox	**Bridgman Lecture** **Tetsuo Irifune**: Multi-anvil technology and applications to novel materials synthesis
9:50am to 10:15am	Lennox	Morning Break
10:15am to 12:15pm	Lennox	**Secular Evolution of the Earth** (Session Chair: Chris McGuire) **10:15am - 10:45am Kenji Ohta**: Inversion of the temperature dependence of thermal conductivity of hcp iron under high pressure **10:45am - 11:00am Jinhyuk Choi**: Layered redox processes of post-giant impact Earth, simulated and probed by European-XFEL **11:00am - 11:15am Eric Edmund**: Thermal Conductivity of Bridgmanite at Lower Mantle Conditions **11:15am - 11:30am Uwe Kleinschmidt**: Electrical and thermal conductivity of iron at Earth's core conditions from ab initio simulations **11:30am - 11:45am Yongjae Lee**: Oxidation of iron by giant impact and its implication on the formation of reduced atmosphere in the early Earth **11:45am - 12:00pm Isaac Taschimowitz**: Modelling the Density of Earth's Magma Ocean Using Machine Learning **12:00pm - 12:15pm Duanwei He**: The mechanical state of the earth's crust and the force source of crustal plate movement
	Lowther	**Computational Methods** (Session Chair: Miguel Martinez-Canales) **10:15am - 10:45am Chris Pickard**: Mapping and accelerating stochastic explorations of dense matter **10:45am - 11:00am Stanimir Bonev**: First principles calculations of liquid entropy **11:00am - 11:15am Hocine Chorfi**: Fine-tuning the strategy XtalOpt + Gibbs2 codes. Application to thermoelectric compounds (AgCl, PbTe and CoSb3): Phase diagrams pT **11:15am - 11:30am Peter Cooke**: Simulating Shock Compression with Ephemeral Data Derived Potentials **11:30am - 11:45am Vili Grigorova**: Use of FEA for temperature gradient determination inside a high-pressure sample assembly **11:45am - 12:00pm Matthew Lane**: Molecular Dynamics to Explore the Role of Temperature, Water, and Porosity in Dynamic Shock Compression of SiO2 **12:00pm - 12:15pm Maximilian Schörner:** Ab initio simulations for the ion-ion structure factor of warm dense matter in the hydrodynamic limit

	Menteith	**Dynamic Studies of Elements** (Session Chair: Jean-Paul Davis) **10:15am - 10:45am Danae Polsin**: Structural Competitiveness in Ramp-Compressed Sodium **10:45am - 11:00am Amy Coleman**: Probing off-Hugoniot states in laser-driven, high-pressure experiments **11:00am - 11:15am Martin Gorman**: Time resolved observations of a phase transformation in dynamically compressed Pb **11:15am - 11:30am Hye-Sook Park**: Studying high-Z material strength under high pressure at the Nation**al Ignition Facility** **11:30am - 11:45am Saransh Singh**: Complex dynamics during a shock-induced phase transition in Zr **11:45am - 12:00pm Cara Vennari**: Observation of defects in shocked diamond below the HEL
	Lammermuir	**Hydrogen** (10:15am to 12:30pm) (Session Chair: Graeme Ackland) **10:15am - 10:45am Arnold Schwemmlein**: Toward Accessing the Solid Metallic State of Hydrogen via Ramp Compression of Solid parahydrogen **10:45am - 11:15am Alexander Drozdov**: Metallization of hydrogen through a semimetallic state **11:15am - 11:45am Dominik Kraus**: Evidence for isolated hydrogen in laser-compressed hydrocarbons **11:45am - 12:00pm Isaac Silvera**: The Metallic Hydrogens: Reflectance, Electrical Conductance, and Metastability **12:00pm - 12:15pm Nakayama Atsuko**: Raman study of supercritical fluid phase of hydrogen at room temperature **12:15pm - 12:30pm Eugene Gregoryanz**: Hydrogen and deuterium at very high compressions
	Moffat	**Molecular Compounds** (Session Chair: Choong-Shik Yoo) **10:15am - 10:45am Maria Rescigno**: High pressure Plastic Phases of water and water-ammonia mixtures **10:45am - 11:15am Hannah Shuttleworth**: Effects of high pressure on the methane-nitrogen binary system **11:15am - 11:30am Niccolo Avallone**: Molecular dynamics study of thermally-activated plastic transition in Ammonia Hemihydrate under intense pressure **11:30am - 11:45am Frédéric Datchi**: Phase diagram and sound velocity of ammonia from Brillouin scattering in the laser heated diamond anvil cell **11:45am - 12:00am Yang Song**: Synergetic Effect of High Pressure and Temperature Leading to Remarkably Enhanced CO2 Adsorption Capacity of ZIF-8 **12:00am - 12:15pm Andrzej Katrusiak**: High-pressure preference for low-density polymorphs
12:15pm to 2pm	Lennox	Lunch
2pm to 4pm	Lennox	**Hydrides 3** (Session Chair: Mikhail Eremets) **2:00pm - 2:30pm Katsuya Shimizu**: Synthesis of Light-Element-Doped Lanthanum Superhydrides **2:30pm - 2:45pm Maelie Causse**: Superionicity of H- in LaH10 superhydride **2:45pm - 3:00pm Di Zhou**: Nuclear magnetic resonance in lanthanum polyhydrides up to 1.5 Mbar **3:00pm - 3:15pm Bin Li**: Observation on Physical Properties of nitrogen-doped lutetium hydrides under pressures below 30 GPa **3:15pm - 3:30pm Sun-Woo Kim**: Microscopic theory of colour in lutetium hydride **3:30pm - 3:45pm Israel Osmond**: Observation of A15-type LaH~6 at Moderate Pressures **3:45pm - 4:00pm Vasily S. Minkov**: Magnetic field screening and magnetic flux trapping in hydrogen-rich high-temperature superconductors

	Lowther	**Static Studies of Elements 1** (Session Chair: Ingo Loa) **2:00pm - 2:30pm Agnès Dewaele**: Mechanisms of phase transformation in metals under extreme conditions: examples of iron and titanium **2:30pm - 2:45pm Emma Ehrenreich-Petersen**: Rapid Compression of Antimony in Dynamic Diamond Anvil Cells: Hunting the Phase Transitions **2:45pm - 3:00pm Laura Henry**: Mesoscale mechanisms of the isostructural phase transition in Cerium **3:00pm - 3:15pm Valery I Levitas**: Recent in-situ experimental and theoretical advances in severe plastic deformations, strain-induced phase transformations, and nanostructure evolution under high pressure **3:15pm - 3:30pm Christian Storm**: The Structure and Behaviour of Na-hP4 Up to 300 GPa
	Menteith	**Nitrides, Borides and Carbides 2** (Session Chair: Matteo Ceppatelli) **2:00pm - 2:30pm Elena Bykova**: Applying methods of high-pressure crystallography in studies of high pressure chemistry of metal borides **2:30pm - 3:00pm Ken Niwa**: Crystal chemistry of binary nitrides and phosphides synthesized at high pressure **3:00pm - 3:30pm James Walsh**: Synthesis of metastable transition metal carbides using high pressure **3:30pm - 3:45pm Andrey Aslandukov**: The discovery of novel high-pressure yttrium nitrides in laser-heated diamond anvil cells using the Domain Auto Finder (DAFi) program **3:45pm - 4:00pm Dominique Laniel**: High-Pressure Synthesis of Ultraincompressible and Recoverable Carbon Nitrides
	Lammermuir	**Next Gen Synchrotrons** (Session Chair: Hanns-Peter Liermann) **2:00pm - 2:30pm Mohamed Mezouar**: ID27_II a unique beamline for science under extreme conditions **2:30pm - 3:00pm Jiyong Zhao**: Perspectives of IXS and NRS for high pressure studies in the APSU era **3:00pm - 3:15pm Gilberto Fabbris**: Probing magnetism at extreme conditions at the APS-U POLAR beamline **3:15pm - 3:30pm Ilya Kupenko**: New opportunities at the Nuclear Resonance Beamline of ESRF with submicron spatial resolution **3:30pm - 3:45pm Changyong Park**: New HDCM and HDMM for Advanced Spectroscopy, Microscopy and Time-resolved XRD at HPCAT 16-ID-D and 16-ID-E Beamlines **3:45pm - 4:00pm Maddury Somayazulu**: Tailored Software and Hardware development for emerging synchrotron high pressure research at HPCAT
	Moffat	**Electronic Transitions 2** (Session Chair: Serge Desgreniers) **2:00pm - 2:30pm Alexander Tsirlin**: Pressure-induced magnetism collapse in 4d and 5d honeycomb compounds **2:30pm - 2:45pm Bishnupada Ghosh**: Strain induced structural and electronic phase transitions in Transition metal dichalcogenides **2:45pm - 3:00pm Roy Cohen**: The Pressure Driven Superconductor-Insulator-Transition in 2D Films **3:00pm - 3:15pm Ece Uykur**: Dimensional crossover and reentrant superconductivity in pressurized kagome metals AV_3Sb_5 **3:15pm - 3:30pm Igor Abrikosov**: Revealing pressure induced electronic phase transitions at extreme conditions **3:30pm - 3:45pm Yuming Xiao**: Synchrotron spectroscopies for the study of electronic and magnetic transitions under high pressure at HPCAT
4pm to 6pm	Lennox	**Poster Session 1 and Refreshments**
6pm to 8pm	Lennox	**EHPRG General Assembly**