



Chicago & Online Everywhere
12-16 December 2022
Join Sessions MR001 & V013

GSECARS is organizing two synchrotron relevant sessions at the 2022 AGU Conference, Dec 12-16. Information below.

SESSION #1:

Session ID# 158262: "Advanced Experimental, Computational and Analytical Approaches in Exploring Deep Planetary Interiors (MR001)"

Great scientific discoveries in mineral and rock physics have traditionally followed in the aftermath of experimental and theoretical breakthroughs. Studying the physical and chemical properties of planet-forming minerals at extreme pressure and temperature conditions provides invaluable information for modeling the planetary interiors' structure and evolution, as well as an insight on geological processes that remain conundrums. Developments in the state-of-the-art static and dynamic experimental methods elucidate fundamental properties (e.g. structure, thermodynamics, kinetics, elasticity, phase relations, etc.) of geo-materials and extend this research to previously inaccessible regions. Pioneer theoretical computations in combination with high quality data and advanced analytical methods allow for the full assessment of countless plausible scenarios that describe micro- and macroscopic processes in various time scales. This session welcomes all contributions that will highlight innovative experimental, computational and analytical techniques that address a wide range of physical and chemical properties in minerals and rocks, and enhance our understanding of the evolution, structure and dynamics of the Earth's interior and other planetary bodies.

<https://agu.confex.com/agu/fm22/prelim.cgi/Session/158262>

Conveners: *Stella Chariton and Vitali B. Prakapenka (The University of Chicago, GSECARS), Haozhe Liu (HPSTAR), Dongzhou Zhang (University of Hawaii at Manoa)*

Invited speakers: *Ho-Kwang (Dave) Mao (HPSTAR) and Jung-Fu (Afu) Lin (The University of Texas at Austin)*

SESSION #2:

Session ID# 158896: "The Evolution of Igneous Systems as Revealed by Synchrotron and Microanalytical Methods (V013)"

Advanced high-resolution and high-sensitivity analytical techniques continue to reveal new insights into the evolution of igneous rocks more than 90 years after the publication of Bowen's foundational text. Synchrotron-based measurements, including X-ray and infrared spectroscopies, diffraction, deformation techniques, XRF analysis, computed tomography and other imaging modalities, create pathways for probing the structural, chemical, and physical properties of igneous materials that are unavailable in conventional laboratory settings. Microanalytical techniques such as LA-ICP-MS, SIMS and EPMA have also seen remarkable technical advances and improvements in spatial resolution and detection limits. These techniques provide unique information for tracing the evolution of igneous systems. This session welcomes contributions highlighting innovative experimental, computational, and analytical techniques that address a wide range of physical and chemical properties of igneous materials, and enhance our understanding of the formation, structure, dynamics, and evolution of the interiors of the Earth and other planetary bodies.

<https://agu.confex.com/agu/fm22/prelim.cgi/Session/158896>

Conveners: *Antonio Lanzirotti (The University of Chicago, GSECARS), Megan Holycross (Cornell University)*

Invited speakers: *Ayla Pamukcu (Stanford University) and Maryjo Brounce (University of California Riverside)*

Please consider attending

[2022 IUCr High Pressure Workshop "Advanced High-pressure Crystallography"](#)

which will take place the week prior to AGU (December 6-10) at the Argonne National Laboratory near Chicago. For more details, visit the workshop's website:

<https://gsecars.uchicago.edu/education-and-outreach/2022-iucr-high-pressure-workshop-advanced-high-pressure-crystallography/>