

WKS: User Workshop for Micromanipulator Use in Diamond Anvil Cell Loading and Other Applications

Organizers: Steven M. Barnett (Barnett Technical Services), Ross Hrubiaik (HP-CAT), and Vitali Prakapenka (GSECARS)

Location: Building 401, Room A1100

The study of material physics under high pressure provides valuable information on the properties of these materials at deep pressures within the Earth (or in other environments). A critical component of these studies is the Diamond Anvil Cell (DAC), where materials under study are placed between two diamonds and a gasket to hold the material in place. For some studies, the samples and other materials need to be placed between the diamonds within limited space with sub-micron resolution. More recently, positioning of pressure calibrates, pressure mediating fluids, and the desire to attach additional sensors (e.g., electrodes) has required even more precise control of sampling position.

Over the past four years, the community of researchers who utilize DACs in their research have started to utilize a micromanipulator manufactured by Micro Support in their research. In some instances, user facilities provide a central resource for DAC loading. In other locations, research is performed independently of the user facilities.

This workshop will facilitate the collaborative interaction between scientists throughout the U.S. to share best practices in their micro-manipulation work. Through this Workshop, users will learn about valuable techniques from others who practice the art and discuss future developments to provide for additional sampling modalities that will allow for extensions of their research.

The morning session will be composed of presentations on best practices, followed by an afternoon session with hands-on practice on equipment that will be brought to the workshop. Speakers will also be encouraged to bring their experimental modules to demonstrate these capabilities and future developments.

This workshop will bring together scientists from throughout the U.S. to share best practices in their micro-manipulation work as well as others who wish to receive hands-on experience with these tools.

Through this Workshop, users will learn about valuable techniques from others who practice the art and discuss future developments that will allow for extensions of their work/research.

8:30—9:15	Welcome Coffee
9:15—9:30	Welcome from Steve Barnett
9:30—9:45	Vitali Prakapenka (GSECARS) <i>GSECARS Programs</i>
9:45—10:00	Ross Hrubiaik (HP-CAT) <i>HP-CAT Programs</i>

10:00—10:20	Break
10:20—10:40	Christopher Snead – NASA Advances in Extraterrestrial Microparticle Handling Techniques in Preparation for Hayabusa2 and OSIRIS-REx Return Samples
10:40—12:00	Steve Barnett New Accessories to Come and Open Discussion
12:00—1:00	Lunch
1:00	Hands-on Workshop/practical Sessions with Micro Support Axis Pro Tools at GSECARS and HP-CAT Facilities