In July 2015, the National Museum of Natural History opened a temporary exhibition entitled “Primordial Landscapes: Iceland Revealed” which looks at the island country of Iceland, one of the most geologically active places on Earth. Mineral Sciences geologist Ben Andrews was part of the exhibit team and assisted in the script writing and the selection of geologic specimens. Iceland is built by volcanic activity and the exhibit highlights the Icelandic landscape through a series of photographs and a few rock specimens. The dominant rock type on Iceland is basalt, a dark colored, fine-grained volcanic rock that is found all over the world and makes up nearly the entire seafloor. One of the more interesting rock features found on Iceland are basalt columns which sometimes develop within lava flows. The “Primordial Landscapes” exhibit contains a specimen of columnar basalt from the NMNH Rock & Ore Collection in the Department of Mineral Sciences. Basalt columns like the ones shown in the exhibition were once quarried for use in fences and as hitching posts in Iceland.

Columnar jointing may form in lava flows as it cools on the Earth’s surface. As it cools, the lava contracts and cracks or joints (fractures) that are associated with stress within the rock may develop. When the contraction occurs at equally spaced centers, then a hexagonal fracture pattern will develop. This fracture pattern will tend to propagate down the lava as it cools, forming long, geometric columns.

Columnar jointing isn’t restricted to basalts, however. This structure can also form in other types of igneous rocks which undergo cooling and contraction. In the Rocks Gallery of the Janet Annenberg Hooker Hall of Geology, Gems & Minerals (GGM) there is a fantastic exhibit of columnar dacite (see below) from Bluff Mountain, Randle, Washington.

Like basalt, dacite is also an igneous rock, but with much higher silica content. Dacite is also typically lighter color than basalt. The dacite columns in the GGM Exhibit were collected from an abandoned quarry roughly 32 km NE of Mount St. Helens and reassembled at NMNH for visitors to enjoy. Photo by Michael Wise.
Tim Rose (Mineral Sciences) and Jane Walsh (Anthropology) spent a few hours in the Q?rius facility as part of the Expert-Is-In series. Tim and Jane shared some of the results of their collaborative research on the dramatic pre-Columbian stone masks of Teotihuacan with visitors to the Museum. During the two-hour session, visitors were able to learn about the history behind these central Mexican treasures including how the masks were made and what types of materials were used to make them. Examples of some of the rocks were available for visitors to examine. Those who stopped by Tim and Jane’s table were able to participate in an hands-on demonstration of the use of primitive tools that might have been used to drill holes in the rock masks. Photos by Michael Wise.
Sierra Kaufman is interested in a variety of disciplines within the planetary sciences including meteorites, cosmochemistry, and outer solar system satellites. This summer she worked in the Mineral Sciences department with Catherine Corrigan on a group of meteorites called enstatite chondrites. The main goal of the project was to identify mineral associations in the meteorites and create a comprehensive, data supported argument that the associations also occur on the planet Mercury, in order to understand the evolution of these planetary bodies. Sierra is an honors student at the State University of New York at Fredonia and will be graduating in May 2016 with her bachelor’s degree in Geophysics and Geochemistry. She intends to pursue her PhD in planetary science. Photo by James Di Loreto.

Brianna Marshall worked as an intern in the Department of Mineral Sciences with Benjamin Andrews this summer to better understand pyroclastic density currents (PDC’s) and their behavior. These hot and dense currents of rock and gas, resulting from volcanic activity, pose numerous hazards when they mix and entrain with the ambient atmosphere. Much of Brianna’s project involves simulating PDC’s in an experimental tank to capture useful information about the processes and parameters driving air entrainment in these currents. Brianna recently graduated cum laude with a bachelor's degree in Geology from Calvin College in Grand Rapids, Michigan. In August, she will begin a two year appointment as a GIS Research Specialist at the Center for Social Research in Grand Rapids. Upon finishing her appointment, Brianna plans to continue her education by pursuing a master's degree in Geology studying volcanic hazards and mitigation. Photo by James Di Loreto.
Oxygen fugacity (fO2), the partial pressure of oxygen, is believed to be at the core of understanding mantle evolution through time. Meena Said worked with Elizabeth Cottrell and graduate student, Suzanne Birner, in the Department of Mineral Sciences to analyze the fO2 of abyssal peridotites – mantle rock located on the deep seafloor of Gakkel Ridge in the Arctic. Her data collection will contribute to the global fO2 data set. Meena is an Honors student at Lock Haven University of Pennsylvania majoring in applied geology. As an active officer of the Geoscience Club, her passion for learning is displayed both in and out of the classroom. Meena plans on pursuing her PhD with an interdisciplinary approach of either biology or materials science. Photo by James Di Loreto.

Staff Changes

Emma Bullock has left the Smithsonian Institution (Division of Meteorites) to join the Geophysical Laboratory at the Carnegie Institution as their Microbeam Specialist. She will be responsible for maintaining and operating the focused ion beam - scanning electron microscope (FIB-SEM) crossbeam system and other microbeam instruments, but also plans to continue her work on meteorites.

After 5 years as a member of the Division of Mineralogy, Cara Santelli will be joining the faculty of the Department of Earth Sciences at the University of Minnesota as an Assistant Professor of Geomicrobiology. There she will continue her research on the impact of microbial activity on geological processes that she started while employed at the Smithsonian Institution.

Mineral Sciences also bid a fond farewell to Pam Salyer who since 2014 had been helping us in the Meteorite Collection.

New Meteorites Collections Manager, Julie Hoskin joined Minerals Sciences in August. Julie has worked with a wide variety of collection artifacts and specimens from numerous museums, including; the National Museum of American History, the Hirshhorn Museum, the Virginia Museum of Natural History, the National Gallery of Art, and the National Museum of Natural History. Julie is an expert in environmental monitoring and control, constructing specialized housing and supports for objects, appropriate chemicals and materials to use with various specimens, digital imaging of specimens and associated information, as well as cataloging objects and recording specimen data.
**Meetings & Abstracts**

**PEG 2015**


---


**Kita, N.T.,** Tenner, T.J., Ushikubo, T., Bouvier, A., Wadhwa, M., **Bullock, E.S.**, & **MacPherson, G.J.** (2015) Why do U-Pb ages of chondrules and CAIs have more spread than their 26Al ages?

**Mayne, R.G. & McCoy, T.J.** (2015) Pallasites: does density matter after all?

**McCoy, T.J. & Bullock, E.S.** (2015) Volatile-rich phases in aubrites: clues to understanding the mineralogy of Mercury?

---

**Selected Publications**


Selected Publications


