

Draft Minutes for the 1624th meeting of the Geological Society of Washington

October 21, 2026

Earth and Planetary Lab, Carnegie Institution, DC

The 1624th GSW meeting was preceded by a poster session. Approximately 17 members and guests from various institutions presented posters showcasing their research.

President Ackerson called the meeting to order at 8:07 PM ET.

Attendance

There were 44 attendees in-person (10 online).

Minutes

The meeting began with announcements, then moved on to the approval of the minutes from the previous meeting (1623rd). The minutes of the 1623rd meeting had been posted online and a Minutes Minute was read aloud and approved.

Guests and New Members

3 guests were announced: Greta Wells (USGS), Rory Changleng (Penn State), Thomas Doggett (Telophase). 2 new members were announced.

Obituaries

None

Announcements

None

Informal Communications

Mike Ackerson: The GSW “Gray book” is being renewed this year; if you received a message from Maryann please respond

Marion Le Voyer: Carnegie EPL is having an open house on October 24th

Formal Program

The formal program commenced at 8:14 PM ET and consisted of three speakers: Will Frazer (Carnegie EPL), Jessie Bersson (Smithsonian NHM/NSF), and Dylan Seal (Carnegie EPL).

1st formal talk: Discontiguous underplating beneath the Hawaiian Islands

Will discussed how plume-plate interactions can help constrain plate swell dynamics, using seismology of the Hawaiian Island Arc to investigate whether underplating is present. Underplating appears to occur below all islands except the Big Island of Hawaii, notably the island which is currently experiencing active magma movement. Underplating at the other islands is limited to locations directly under the islands. Together, this indicates a large influence from underplating on plume magma flux and, to a lesser degree, plate buoyancy.

Liz Cottrell (Smithsonian NHM): what's the isostatic response when the surface of the island erodes?

Mike Walter (Carnegie EPL): what do you think the actual composition of the underplating is?

Unknown: The Smithsonian might have xenoliths relevant for your work; also, is there a borehole seismometer, cable data, or other offshore data sources you could use?

Keith McGlothin (ret.): have you looked at the ALOHA data?

Andrea Golden (unknown): why does the magma flux, reflected by different underplate volumes, change from island to island, and what do you estimate the underplate volumes relative to eruption volumes to be?

Linda Rowan (CRS): does the geometry of the teleseismic arrays affect the model?

Laura Keene: what are the velocity contrasts for the underplate structure

Mong-Han Huang (UMD): are underplates further from the plume smaller?

8:15-8:30

2nd formal talk: Even Magma Gets the Bends: Crystallization During Ascent

Jessie discussed how magma decompression rates influence and are reflected in crystal size, shape, and abundance, using examples from the Cascade Range due to their large range of ascent rates. Laboratory decompression experiments reveal the formation of cristobalite (a respiratory hazard in ash, and an agent of eruption explosivity) in vesicles at low final pressures, suggesting that this mineral phase forms during shallow stalling or slow ascent.

Thomas Doggett (Telophase): why is there a difference between natural and synthetic cristobalite?

Liz Cottrell (Smithsonian NHM): are you sure the system was closed, since you couldn't establish equilibrium after 11 days?

Unknown: do you analyze the phases, or do you do mass balance?

Mike Ackerson (Smithsonian NHM): did you weigh the sample before and after the experiment to confirm no mass loss?

Unknown (Carnegie EPL): have you compared your results with other decompression experiments?

Mong-Han Huang (UMD): can your experiments help constrain the depth at which crystallization happens, not just pressure?

Andrea Golden (unknown): how do you apply these results to understand crystal assemblage formation pathways?

Mark Tyra (NIST): can what you're doing inform a model?

8:48-9:06

3rd formal talk: Expanding the Story of Mars: New Insights from a 1.3-Billion-Year-Old Meteorite **46 guests remaining (37 in person, 9 online)**

Dylan shared a suite of radiogenic isotope analyses of a martian olivine-phyric shergottite meteorite. The meteorite sample included pockets of localized melting from shock metamorphism, and isotope ratios are consistent with a martian origin. The age of the meteorite lies between the two populations of other shergottite ages, and may have originated from an undifferentiated mantle reservoir left over from the early days of planetary formation.

Mike Ackerson (Smithsonian NHM): where do you get your high-quality acetic acid?

Ved Lekic (UMD): would your results be compatible with a depleted mantle, and how much might this depletion vary spatially?

Keith McGlothlin (ret.): where's the impact on Mars that this would have been sourced from?

Ross Salerno (USGS): how does this age compare to the age of other depleted shergottites?

9:19-9:36

President Ackerson adjourned the meeting at 9:44.

Respectfully submitted by Karin Lehnigk, GSW meeting secretary