

The light element composition of Earth's core

FRIDAY MARCH 28

Zoom: bit.ly/FORCEseminar

12 PM PDT/AZ

3 pm Eastern

The Earth's Fe-Ni core is known to contain ~10% "light elements" (e.g., Si, O, S, C, H) whose identities and abundances are controversial. Many different approaches can provide insights into Earth's core composition, including those based on cosmochemistry/geochemistry, physical properties of the core, and metal-silicate reactions during core formation. In this talk, I will review the available constraints on core composition from high pressure experiments, synthesizing previous results from our group and many others. In particular, I will focus on comparisons between seismic data and high P-T experimental measurements of the densities, sound velocities, and phase relations of Fe-rich alloys, as well as high P-T metal-silicate partitioning experiments and the incorporation of their results into core formation models. While Earth's exact core composition remains elusive, this type of integrative approach is particularly useful for placing bounds on light element abundances and identifying which types of future high pressure measurements will be the most helpful in constraining the core's composition.



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Dr. Fischer received her B.A. from Northwestern University in 2009 and her Ph.D. from the University of Chicago in 2015. She spent two years as an NSF Postdoctoral Fellow, jointly at the Smithsonian National Museum of Natural History and the University of California Santa Cruz, before joining the faculty at Harvard in 2017. Dr. Fischer's group specializes in high P-T experiments using laser-heated diamond anvil cells, combined with numerical modeling of planetary-scale phenomena. They investigate the compositions and properties of deep planetary interiors, the processes of accretion and core formation, and how these intersect to influence planetary habitability.

SEMINAR SCHEDULE _____ *Fridays at 12 pm PDT/AZ*

April 18

Asmaa Boujibar Geology
Department, Western
Washington University

May 2

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