Zoë Wilbur

Citizenship: United States

Proposed Program: Planetary Science at the University of Arizona, USA

Ms. Wilbur is a Ph.D. candidate at the University of Arizona's Lunar and Planetary Laboratory. Her dissertation studies are funded through a NASA FINNEST Fellowship, Smithsonian Hevey Fellowship, and Philanthropic Education Organization Fellowship. During her final year of undergraduate study at the University of Nevada, Las Vegas, Ms. Wilbur began a senior thesis to study the formation of rare meteorite samples and assessed their relevance as analogues to the planet Mercury. She analyzed mineral chemistry within these meteorites at NASA's Johnson Space Center, where she interned and then worked as a contract employee. Working at NASA and being surrounded by Apollo samples and meteorites inspired her to learn more about the inner Solar System, and how planetary bodies formed and evolved.

Ms. Wilbur's Ph.D. research investigates the volcanic histories of Apollo 15 and Apollo 17 basalts. Of interest to her dissertation is an Apollo 17 basalt that was stored frozen and has been released for study for the first time after 50 years. This frozen sample is part of the "Apollo Next Generation Sample Analysis" Program. Ms. Wilbur and her advisor are the first researchers to study this sample since its return from the Moon. This frozen sample offers a direct comparison to other basalts curated using traditional methods at room temperature and gives the opportunity to search for volatiles (like water) using improved, 21st century techniques. To analyze this specially curated sample, Ms. Wilbur is utilizing a novel combination of 2D and 3D methods, including the measurements of water, chlorine, and fluorine in lunar minerals and 3D gas bubble structures.

She aims to understand the history of degassing (volatile loss) among the sample suites, how eruption dynamics are preserved in lunar basalts, and to what extent volatile behavior is dependent upon a basalt's chemical composition.