

Emily Brodie, Texas Tech University, Lubbock, Texas, USA, for her project:
Do Peritectic Reactions Affect Trace Element Abundances in Clinopyroxene?

I am a second year Master's student at Texas Tech University, exploring trace element behavior in high-temperature magmatic clinopyroxene (CPX) and the reliability of the crustal thickness proxies determined from their equilibrium melt compositions. I am originally from Albuquerque, New Mexico and received my undergraduate degree at Trinity University in San Antonio, TX. At Trinity, I studied detrital zircons from the Klamath Mountains. Afterwards, I began working with Dr. Katie Ardill on a Cordillera-wide project.



This project analyzes the trace element abundances in magmatic CPX in tonalite and diorite samples collected from the Late Cretaceous Mount Stuart Batholith (MSB) in the Northern Cascades, Washington. The MSB was emplaced between 0.2-0.4 GPa (~6-12 km) and contains multiple distinct CPX textures including relict CPX cores in hornblende, euhedral CPX in peritectic reactions with hornblende, and CPX in equilibrium with surrounding minerals. The relationship between CPX textures and their trace element abundances has not been examined in the Cascades and may illuminate the ways in which magma processes affect petrologic crustal thickness calculations.

The Lipman Research Award from the Howard and Jean Lipman Foundation will allow me to investigate how the variability of CPX textures reflects variation in trace element concentrations. Additionally, I will determine if equilibrium melt compositions calculated from high temperature CPX contain a geochemical record of lower crustal melts. The funds will be used for travel and single-mineral electron microprobe (EMPA) and laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) analyses.