

Jillian Cavellier, University of Kentucky, Lexington, Kentucky, USA for their project: *Constraining the controls on REE-mineral fertility in metasedimentary and metaigneous rocks of the southern Appalachian Blue Ridge and Inner Piedmont terranes.*

I am a third-year PhD candidate at the University of Kentucky, investigating rare earth element (REE)-accessory phase mineral petrochronology in the southern Appalachians. I am originally from Dexter, New York, a small town about 30 minutes from the Canadian border in northern New York. I received my undergraduate degree from SUNY Oswego in Oswego, NY and then completed my masters degree at the University of Kentucky. During my masters, I applied my geoscience skills to civil engineering and studied the effects of high temperatures on the mineralogy of new lower CO2 cements.

This project of my dissertation investigates how bulk-rock chemistry governs REE-bearing mineral abundance. Constraining the origin and distribution of REE minerals will provide critical in-sight into the tectonometamorphic evolution of the Appalachian orogen. Understanding the petrogenetic processes responsible for REE-enrichment, whether magmatic, metamorphic or hydrothermal, also enhances regional mineral exploration models and refines our understanding of crustal processes that control critical element distribution in orogenic belts.

The Howard and Jean Lipman Foundation Research Award will allow me to determine the bulk-rock composition of major, minor and trace elements in metamorphic rocks to identify potential compositional controls on REE-bearing mineral fertility. Delineating the source of REE-bearing minerals could contribute to the diversification and strengthening of the domestic supply chain for critical minerals in the United States. The funds will be used to create an X-ray fluorescence (XRF) dataset of metasedimentary and metaigneous rocks in the southern Appalachians, specifically in Georgia, where there is currently a gap in geochemical data. and am thankful for the supportive community that the MGVP and GSA provide for early career researchers.

