

Nandana Goswami, University of South Carolina, Columbia, SC, for her project: *Determining paleo-crustal thickness of the Pikwitonei Granulite Domain*



I am Nandana Goswami, a PhD student currently working under the guidance of Dr. Besim Dragovic at the School of Earth, Ocean and Environment in the University of South Carolina. My research mainly focusses on unraveling Neoarchean tectono-metamorphic mechanisms in the Pikwitonei Granulite domain (PGD), Manitoba, Canada by analyzing different rock samples from the area (e.g. mafic granulites, metaironstones, TTGs). To do this, I employ a wide range of techniques

e.g. garnet and zircon geochronology, thermodynamic modeling and geochemical analyses.

I am deeply grateful for the support provided by the Lincoln S. and Sarah W. Hollister Graduate Student Research Award, which will significantly support my research. The PGD is a preserved section of Neoarchean crust, ideal for studying early plate tectonics. Prior studies suggest that PGD formation may result from either mafic underplating beneath continental arcs or radiogenic heating in an overthickened crust—yet neither incorporates crustal thickness data. Crustal thickness distinguishes tectonic regimes, as each setting has a unique thickness. Using this award, I aim to estimate paleo-crustal thickness using the composition of tonalite-trondhjemite-granodiorites (TTGs), which are abundant in the PGD but have not been used to constrain thickness or build a tectonic model. This will involve looking at elemental ratios such as the well-known chemical ‘mohometers’ Sr/Y, La/Yb. This, combined with pressure-temperature-time estimates from existing literature and other portions of my doctoral studies, will help constrain a tectonic model for the PGD.

When I am not working, I like playing chess and other board games.