High resolution Microstructural and Chemical Analysis of Xenotime in Naturally and Experimentally Shocked Samples.

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My project is to study xenotime from both naturally and experimentally shocked samples in order to understand more about how the phases changes both chemically and microstructurally during shock deformation. I am working on xenotime from the Woodleigh impact structure, targeting the phase in lithologies within the central uplift drill core which include mylonitic paragneiss, orthogneiss, gneissic amphibolite, microgranite and pegmatite and this will allow a better understanding of the response the phase has to shock deformation within rocks that contain different mineralogy and fabrics. I will then use xenotime standards that will be deformed using a flat-plate accelerator (FPA) in the Experimental Impact Lab within ARES at the Johnson Space Center, Houston. I will use the techniques EBSD, TKD, TEM and EPMA to characterize and document the microstructural and chemical changes within xenotime, with any recrystallized grains from the naturally shocked samples targeted for geochronology.

Personal Statement

From a young age I was always intrigued by the night sky and geology. I decided to further my understanding and explore my passion of the Earth through a geology degree at Curtin University. Now in my PhD, I am extremely interested in impact cratering processes and unravelling the complex history of these impact events through studying the geology of the structures. I enjoy using both fieldwork and lab based techniques in order to conduct science and therefore i am very excited about being able to conduct my analysis on both naturally and experimentally shocked samples!