

The impact of the impact, what does feldspar say?

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Hypervelocity impact cratering is a fundamental process that plays an important role in the formation and evolution of planetary bodies in the solar system. Rocks subjected to impact events undergo a progression of deformation and display a variety of so-called shock features. For the past decades, shock features have been studied extensively in common rock-forming minerals on Earth and the Moon, such as feldspar. Feldspar, the most abundant components of igneous rocks found in the crust of Earth and the Moon, can also be detected in meteorites and on the surfaces of Mars, Venus and Mercury. Nowadays, various micro features in feldspar are used as a standard diagnostic indicator for natural shock events. However, due to the complex chemical and crystal structure, it is more complicated to identify and study the formation of shock features in feldspar. My research for the past few years studied the shock features in feldspar using both naturally shock samples from terrestrial impact crater and Apollo samples, and experimental methods to scale the pressure and temperature conditions for the development of these features. Come to the Geology Open Night to see what feldspar can tell us on the impact of the impact events on planetary bodies throughout our solar system.

Tianqi Xie is a postdoc working in the Department of Geosciences at Stony Brook University since Fall 2022. She uses modern spectroscopy, high pressure experimental instruments and synchrotron X-ray techniques to study the changes in minerals under pressure-temperature conditions found on planetary bodies. Tianqi obtained her PhD in Geophysics from the Department of Earth Sciences, University of Western Ontario, Canada, in 2021.