

Ammar Hussain, University of Houston, Houston, TX USA, for his project: *Geochemical & Multiscale Remote Sensing study of critical mineral hosting Pegmatites in Skardu Region, Karakoram Range*.



Ammar Hussain is a PhD candidate in the Department of Earth and Atmospheric Sciences at the University of Houston, supervised by Dr. Shuhab D. Khan in the GeoRS lab. His research focuses on geological remote sensing for critical mineral exploration using hyperspectral imaging.

His current work investigates pegmatites in the Skardu region of the Karakoram Range, targeting critical minerals such as rare earth elements (REEs), lithium, and beryllium. Laboratory-based hyperspectral imaging (400–2500 nm) is used to analyze lithological variations, detect diagnostic absorption features, and map mineralogical compositions. These data are integrated with geochemical analyses (ICP-MS, XRF) to validate spectral signatures and quantify elemental concentrations, aiming to evaluate the efficiency of hyperspectral imaging for critical mineral detection in complex pegmatitic systems. This research represents the first integrated hyperspectral and geochemical investigation of pegmatites in this region and will help establish methodologies for critical mineral exploration in remote and underexplored terrains. The broader objective is to refine hyperspectral imaging workflows applicable to various mineralized systems.

Ammar holds a BS and MS in Applied Geology from the University of Punjab, Pakistan. His interests include quantitative geological remote sensing and critical mineral exploration using advanced hyperspectral and geochemical techniques.

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