

Currently, there is a lack of high fidelity lunar highland regolith simulant available in large quantities and contained in an appropriately controlled laboratory environment. The absence of this resource is preventing long term, full-scale testing of proposed lunar technologies which is critical for the success of future exploration and utilization of the moon.

Our group is currently converting more than 20 tons of Shawmere anorthosite, along with other components into enough high-fidelity highland regolith simulant to set up a Lunar Surface Simulation (LSS) Lab about the size of a tennis court, with regolith simulant depths up to 2 meters. The objectives of our efforts are to provide a high-fidelity testing environment for academic, commercial and government research and development that allows researchers to “test it like you fly it”, accumulate a large body of practical knowledge working with regolith, and provide unique opportunities for students who would normally find it difficult to travel to other research opportunities.

This presentation outlines raw material sources, manufacturing methods and application of NASA figures of merit to the simulant production process. Also covered is the set-up of the LSS Lab, including environmental controls, safety and operation protocols, current status, short and long-range goals, research objectives and partnering and outreach efforts.