Space Resource Enabling Technology Development at Colorado School of Mines

• Main laboratory for research related to the new Space Resources degree program
• 3 cryogenic and heated vacuum chambers
• Solar simulators from 1W – 30kW
• Ongoing experiments and technology development for ISRU applications
  • Regolith fundamental scientific testing
  • ISRU architecture development
  • Manufacturing and mining technology development
ISRU Experimental Probe and Lunar Test Bed

Geophysical Testing

Lunar Ice Mining

Asteroid Mining

Additive Manufacturing

Introduction

IEP (Inside)

IEP (Outside)

Lunar Outpost* Rover in Test Bed

Lunar Rover Test Bed

*Courtesy Lunar Outpost, 2019
NIAC 2019 Phase I Award Winner, Ongoing Lab Testing & Architecture Design

Introduction

Geophysical Testing

Lunar Ice Mining

Asteroid Mining

Additive Manufacturing

Thermal Mining Architectural Design

Lunar Ice Mining Penetrometer Tests*

*Courtesy Jared Atkinson, 2019
Concentrated Solar Asteroid Mining, Test Bed and Simulant Preparation

OMTB Lamp
Spalled Asteroid Samples
OMTB Chamber (Inside)

Asteroid Simulant Samples

Phase III NIAC Winner 2019!
Concentrated Solar Regolith
Additive Manufacturing

Simulated Solar Regolith Melting Setup

Melted Regolith Simulant Samples, Various Conditions

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- JSC No Vac
- JSC Vac, Dry
- JSC Vac, No Dry
- UCF Vac, No Dry