

Space Mining

Heating Asteroids to Mine Water →

- How to manufacture spacecraft fuels in space?
- Bag and bake asteroids, trapping the off-gasses.

Water to support Human Exploration of Mars

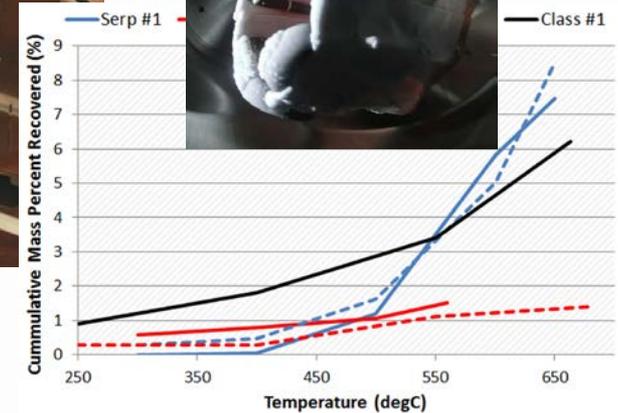
- How to provide water on-site for a Mars base?
- Mine and process deposits of water ice, hydrated clay, gypsum, and/or "ordinary" dirt.

Lunar Mine Design

- Deconstruct Earth mining methods, then ...
- Rework them for the space environment

Energy of Dry vs. Saturated Rock Breaking

- Is fully wetted porous rock weaker than dry rock?
- Under some conditions, yes – others, no.



Space mining will reduce cost/risk of space, and lighten humanity's footprint on Earth.

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- NASA Science Mission Directorate
- NASA Space Technology Mission Directorate
- Boeing

Keywords

- space mining, moon mining, asteroid mining, Mars mining, rock fragmentation, mechanical excavation, mining method development, mine design

Recognitions

- Conference Chair, ASCE Earth & Space 2014
- Past Chair Awards: ASCE Aerospace Division, AIAA Space Resources Technical Committee
- SME Mining & Explor. Distinguished Service Award