



# Micro In Situ Tomography (MIST)

PI: Obbard/Dartmouth College

**Target:** Mars surface

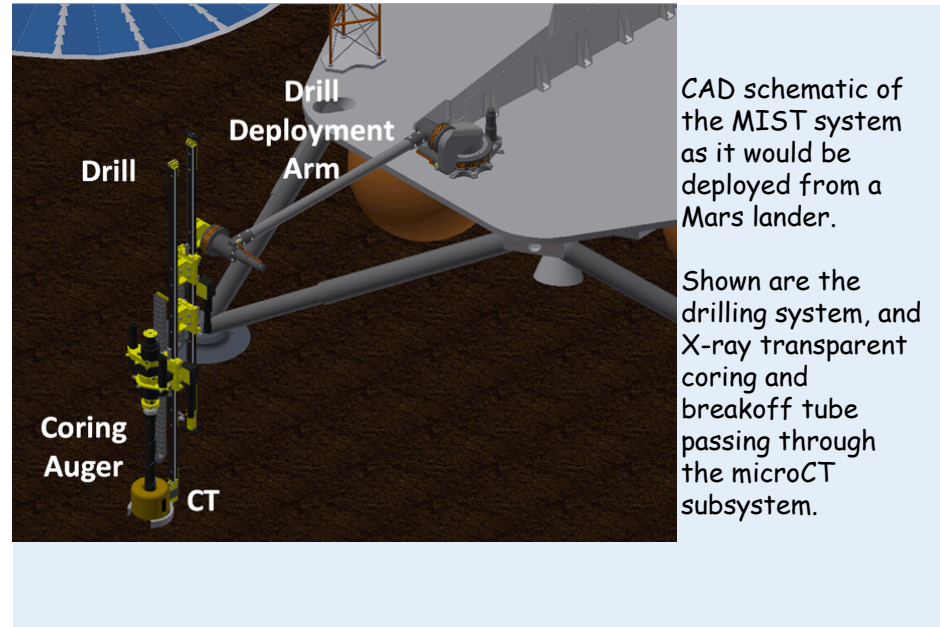
## **Science:**

- Sample the Mars NPLD to characterize scale of layering to better than the current 10 cm. This will help us to understand the climate signal contained in PLD.
- Characterize the dust concentration in NPLD layers to help us understand annual accumulation and climate cycles.
- Characterize porosity of NPLD to help us understand source of water ice, meteoric or condensation, important to understanding hydrologic cycle.
- Investigate the relative chemistry of NPLD layers to identify the presence of salts.

## **Objectives:**

- Design a miniaturized microCT system and associated X-ray transparent coring and breakoff tube for the TRIDENT drill.
- Develop/build and test prototype MIST components in laboratory cold environment.

**CoIs:** Philippe Sarrazin/SETI  
Kris Zacny, Honeybee Robotics



## **Key Milestones:**

Year 1: Produce and microCT NPLD simulant. Build breadboard microCT subsystem. Select coring tube material.

Year 2: Design and build transportable brassboard of microCT subsystem. Test at NASA Ames. Fabricate a full scale (1 m long) auger from the selected material.

Year 3: Test the full scale auger with TRIDENT drill in cold room. Characterize simulant and analog systems.

TRL (2) to (4)