



Sample Return Instrumentation for Small Solar System Bodies

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Target: Airless body surfaces

Science:

- Ascertain the content, origin and evolution of the solar system and the potential for life;
- Determine why asteroids are cohesively bound to prevent rotational break-up
- Determine composition of the asteroids, including the presence of any organic compounds.

Objectives:

- Model and validate performance of the penetrator against hard rock;
- Optimize performance of the Sample Return Canister (SRC);
- Design and test a recovery system of the SRC back onto the spacecraft;
- Design and specify the spacecraft receptacle for the SRC.
- Complete a preliminary design for the system relevant for potential future spacecraft missions

CoIs: N/A

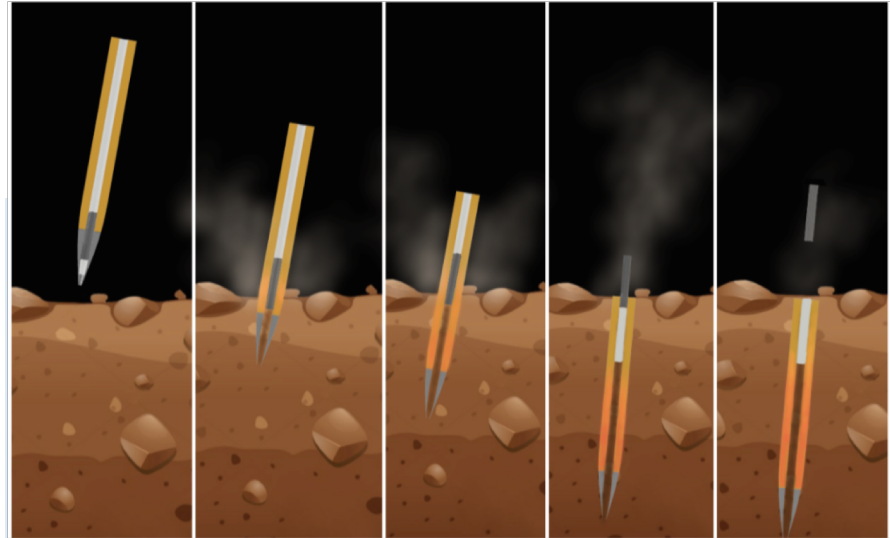


Figure Caption: High-speed penetrator is used for the collection and self-ejection of a sub-surface rock sample

Key Milestones:

- Penetrator Flight Test with SRC Ejection Test A, June '18 TRL 2, Test B Nov '18, Test C June '19 (TRL 4);
- Optimization of Penetrator & SRC Nov.'19 TRL4 - July 20 TRL5;
- Design Recovery System, July '18 (TRL1); Test July '19 (TRL 3) Optimize July '20 (TRL5);
- Spacecraft Receptacle July 19 (TRL 1) ; Optimize July 20 TRL4).
- Preliminary Design, May '20 (TRL4).