Maturation of the Potassium-Argon Laser Experiment (KArLE)

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Platform: Lander or rover

Science:

- First use of In situ geochronology to determine when major events (magma crystallization and impact modification) occurred on the Moon
- Volatile analysis on sample surfaces and interiors
- Neutral species exospheric analysis over a lunar day
- Sample petrology and elemental composition

Objectives:

- Build an flight-fidelity integrated KArLE experiment
- Incorporate sample handling system with sample carousel and analysis chamber
- High-heritage mass spectrometer
- COTS optical components (LIBS and camera)
- Test integrated system under thermal vacuum and vibration conditions
- Integrate system onto an analog planetary rover

CoIs: Will Brinkerhoff, Jim Garvin /GSFC; Kris Zacny, Steven Indyk / Honeybee; Rick Arevalo / University of Maryland

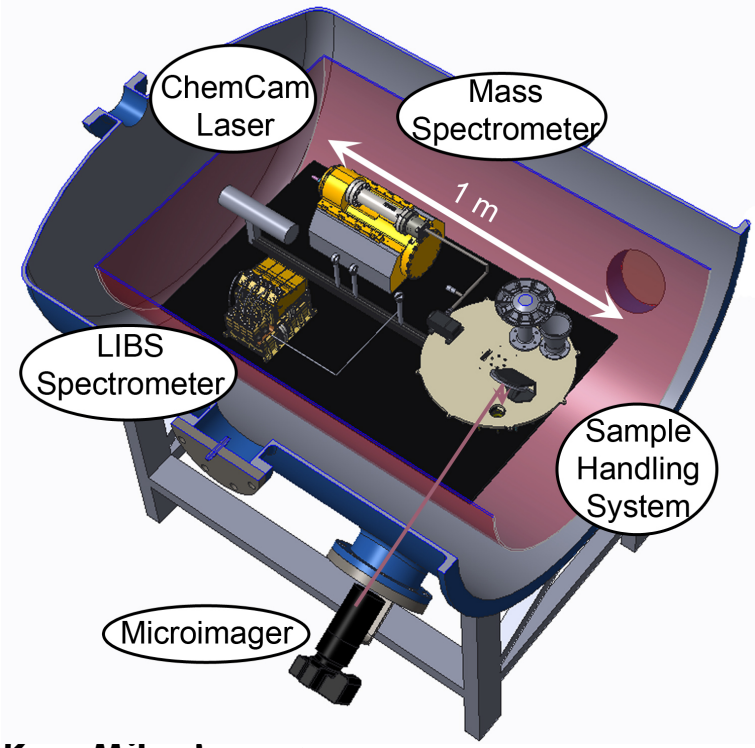

Figure Caption: KArLE uses flight-heritage components to achieve the first in situ geochronology of a planetary surface. We will integrate these components into a compact brassboard for functional testing in a TVAC chamber.

Key Milestones:

- Kickoff and Requirements definition (Jan 2019)
- Design and build sample handling system and mass spectrometer (March 2019)
- Design and build brassboard and support (Sept 2019)
- Integrate components (March 2020)
- TVAC and vibration tests (June 2020)
- Rover test (October 2020)

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