



Identification of Optimal Ablation Wavelength and Pulse-Duration for Improved In-Situ Dating

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Target: Mars, Moon, Asteroids

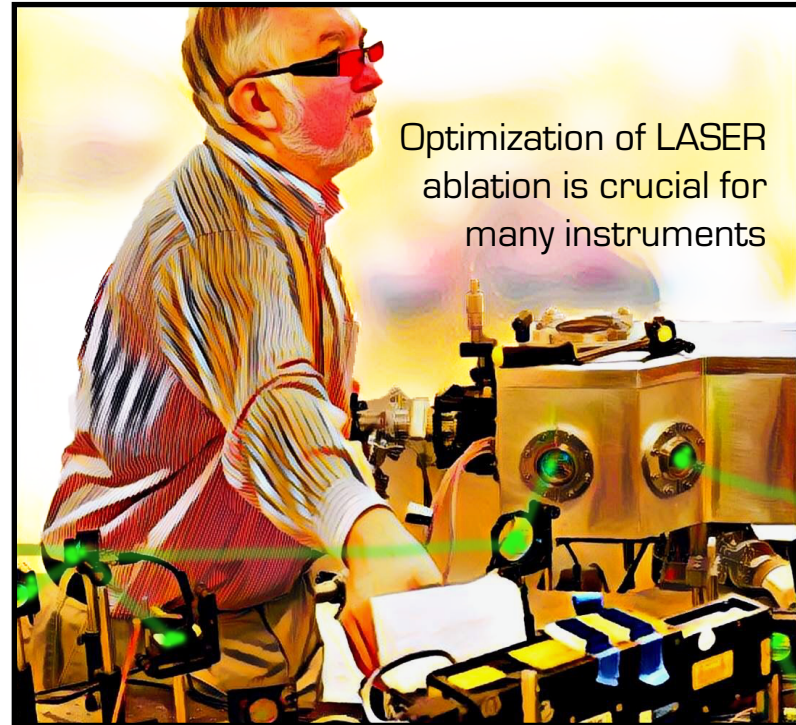
Science:

- Use in-situ dating to revise the history of the Moon and Mars, and rewrite the history of the inner solar system
- Understand the optimal pulse duration, wavelength, and intensity for laser ablation
- Improves numerous measurement approaches, like Mass Spectrometry, LIBS, etc
- For our specific Chemistry, Organics, and Dating EXperiment, will result in:
 - Better dating accuracy
 - Expanded capability for more difficult samples

Objectives:

- Measure ions, neutrals, plasma, velocities, and material removal for common minerals and standards using nano-second, pico-second, and femto-second ablation pulses with range of intensities and wavelengths
- Use resulting optimal ablation parameters to develop new laser design

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Key Milestones:

- Year 1: Install ps/fs laser system (3/2018)
- Year 1/2: Systematic fs-ablation analyses (12/2018)
- Year 2: Systematic ps-ablation analyses (7/2019)
- Year 2: Systematic ns-ablation analyses (3/2020)
- Year 3: Assess miniature ablation laser designs (7/2020)

TRL (2) to (3)