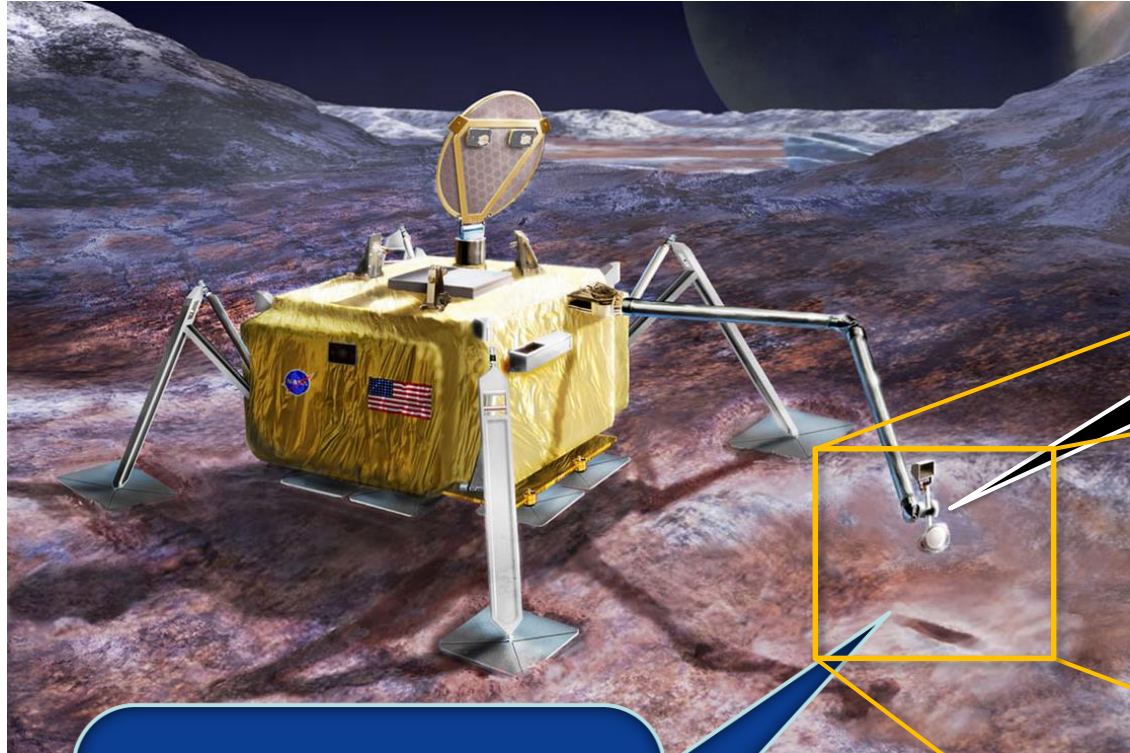




# CITADEL: Europa Surface Simulation

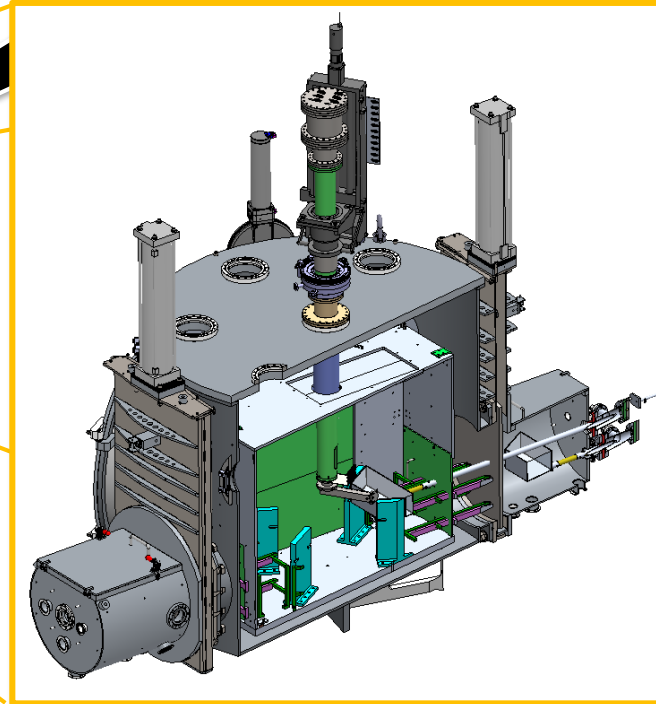


## Surface Interaction

- Create trench > 10 cm depth
- Collect 7 cc of material
- Transport & deliver sample for analysis
- Maintain sample at temp < 150 K

## Challenging Environment

- Unknown surface topography (potentially rough at all scales)
- Unknown material properties (potentially with reactive constituents)
- Cryogenic surface temps (70–130 K)



**Authors:**  
Chris Sercel  
Dan Berisford  
Tom Green  
Eric Roberts

**Jet Propulsion Laboratory,  
California Institute of  
Technology**