CORSAIR

COmet Rendezvous, Sample Acquisition, Investigation, and Return

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MISSION OVERVIEW: Comets are invaluable time capsules that preserve materials from the dawn of the Solar System. *CORSAIR*'s proposed mission is straightforward: to return to Earth for analysis these early Solar System relics from a comet nucleus. (Organic analysis will be done at Goddard.)

If selected, *CORSAIR* would return the first macroscopic comet samples directly from the nucleus of **comet 22P/Kopff**, as well as coma dust samples. Volatile ices would be sublimated from the samples and chemically characterized before samples are returned for analysis on Earth. 22P/Kopff is ideal for *CORSAIR*'s proposed mission because it is a highly accessible, regularly observed, active Jupiter-family comet that will provide new discoveries from this first exploration.

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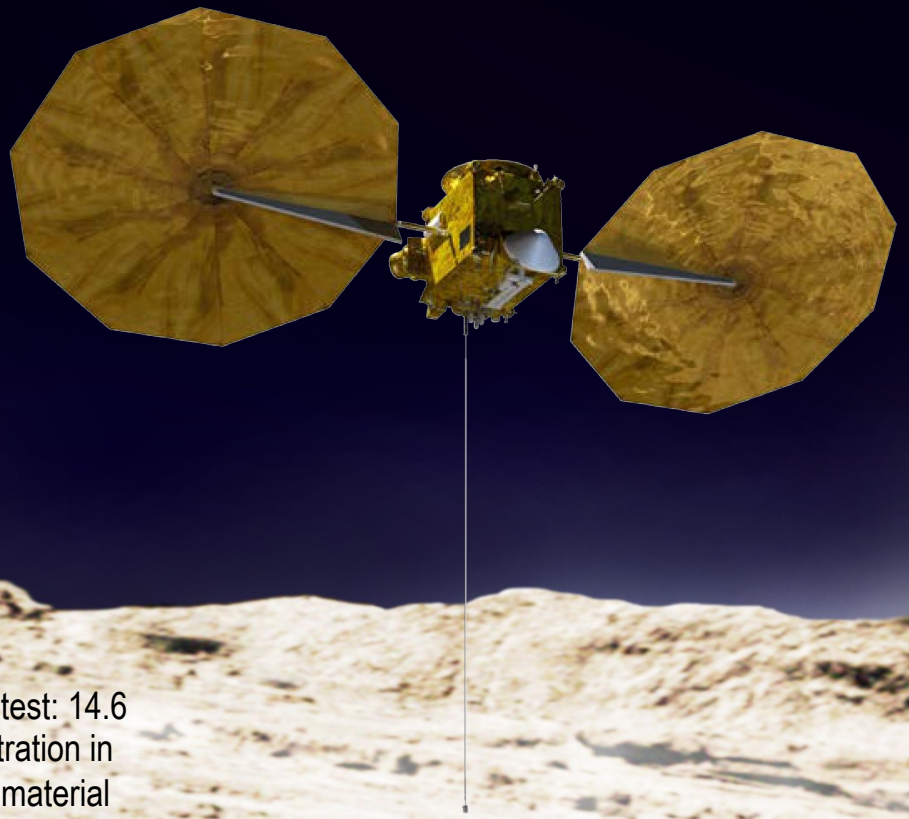
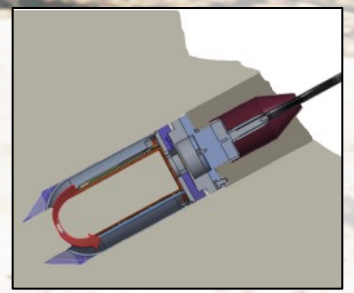
NASA | Johns Hopkins Applied Physics Laboratory | DLR | JAXA | JPL | Aerojet Rocketdyne

*CORSAIR*s Rugged Sample Acquisition System

- *CORSAIR's* proposed sampling system is the culmination of years of hardware development and testing.
- Sampling would be safely conducted without landing, using a tethered probe, while the spacecraft remained 10 m above the surface.
- *CORSAIR*'s proposed sampling system is designed to collect material down to depths of at least 10 cm, and possibly up to a meter, to access more primitive material that may be below the alterred surface.
- The system is designed to sample over an extensive range of surface strengths and local topographies, from loose regolith to solid material.





Sampler schematic: 9-cm outer diameter

Sampler test: loose material

Sampler test: 14.6 cm penetration in 2.4 MPa material