Centaur ORbiter And Lander (CORAL)

Centaur orbiter and lander (CORAL) investigates a Centaur from orbit and in situ, exploring one of a population of dynamically evolved but compositionally-primitive small icy bodies from the Kuiper Belt that currently reside between Jupiter and Neptune. The proximity of Centaurs provides an opportunity to conduct a comprehensive study of the geochemical and physical properties of primordial ice-rich planetesimals, which trace the composition of nebular volatiles such as H_2O, CO_2, CO and NH_3, revealing the nature of early Solar System compositional reservoirs. The mission will map the surface and measure the ices and organics in situ.

CORAL Science Objectives:

- Determine the chemical and physical properties of a Centaur to understand the nature of primitive planetesimals
- Perform in situ elemental, isotopic, and organic analyses of a Centaur to develop a comprehensive understanding of the composition and initial conditions of the protoplanetary disk
- Determine the shape, topography, geological landforms, and density of a Centaur to understand the evolutionary history of this population of objects
- Determine degree of aqueous alteration on a Centaur to investigate the biologic potential of icy planetesimals and potential brine reservoirs

The mission shall address all four objectives.

The full CORAL mission study report is available at
https://drive.google.com/file/d/1nfvptLBEOkKo546hgkS_kqBOpoyruslI/view?usp=sharing