SUrface Dust Mass Analyzer (SUDA) selected for Europa mission

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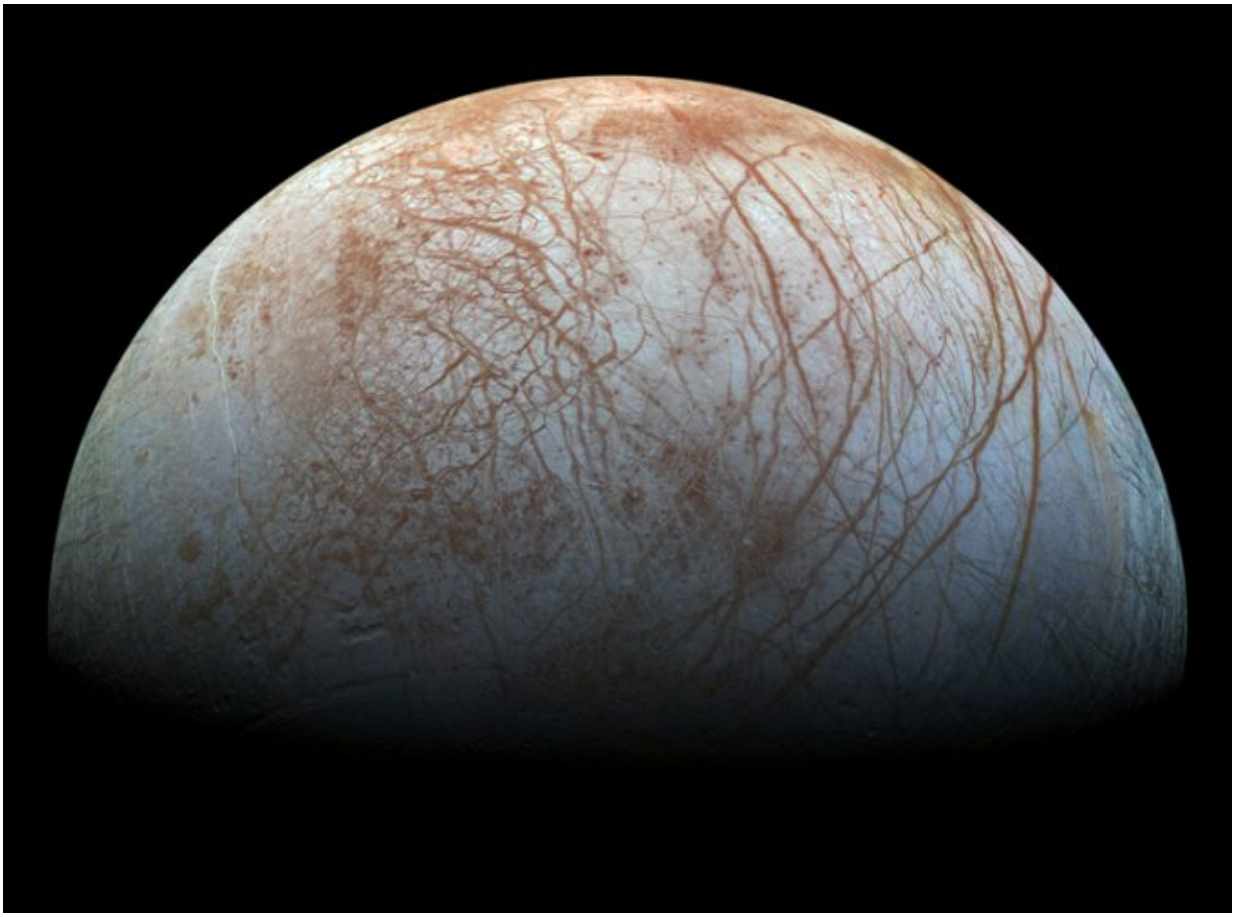

Europa. Credit: NASA/JPL-Caltech/SETI Institute

A University of Colorado Boulder instrument has been selected to fly on a NASA mission to Jupiter's icy moon, Europa, which is believed to

harbor a subsurface ocean that may provide conditions suitable for life.

The CU-Boulder instrument, known as the SUrface Dust Mass Analyzer (SUDA), will be used to measure the composition of solid particles released from Europa's surface due to meteoroid bombardment. The instrument also will be able to measure the properties of small, solid particles believed to be spewing from a hidden ocean within the moon, said physics Assistant Professor Sascha Kempf, principal investigator on the project.

"We are really, really excited," said Kempf, a research associate at CU-Boulder's Laboratory for Atmospheric and Space Physics where the instrument will be built. "This instrument will be used to support the overarching goal of the Europa mission, which is to understand the prerequisites of life in the solar system."

There is evidence from both NASA's Galileo mission to Jupiter and from Hubble Space Telescope images that plumes of water and ice particles are shooting out from Europa's surface, according to NASA officials.

SUDA was one of nine instruments selected today by NASA for the mission to Europa from 33 proposals from around the world. Other CU-Boulder co-investigators on the instrument – which has been under development for about 10 years – include physics Professor Mihaly Horanyi and aerospace engineering sciences department Assistant Professor Zoltan Sternovsky. Sternovsky also is affiliated with LASP.

Europa is one of four large Jovian moons and is about the size of Earth's moon. Scientists believe there is a frozen crust about 40 miles (70 kilometers) thick separating the ocean from the surface, said Kempf. The ocean, which may be heated by Europa's interior, could harbor more than twice as much water as Earth's oceans, according to NASA

officials.

NASA's fiscal year 2016 budget request includes $30 million to formulate a mission to Europa. The solar-powered spacecraft would be placed in a long, looping orbit around the gas giant Jupiter – the largest planet in the solar system – performing repeated flybys of Europa as close as 16 miles (25 kilometers) over a three-year period.

"There appears to be an exchange of material occurring between Europa's surface and its subsurface ocean," said Kempf. "We are building a very powerful instrument that will provide us with information about the moon's interior structure and the repository of material in the water under the ice crust."

Students play a major role in all research activities at LASP, said Kempf. "We already have both undergraduates and graduate students involved in this project, and through the course of the mission they will be working on everything from software development and instrument testing to data acquisition and analysis."

In March, a CU-Boulder-led study involving Kempf used data from NASA's Cassini mission indicating microscopic grains of rock detected near Saturn may be due to hydrothermal activity taking place within its moon, Enceladus.

About the size of a lunchbox, the LASP instrument for Europa will weigh about 24 pounds, much of it for special high-tech shielding to protect it from the harsh radiation environment of Jupiter. LASP also has a dust instrument on NASA's New Horizons mission to Pluto called the Student Dust Counter built entirely by students. Launched in 2006, New Horizons will make its closest flyby of the dwarf planet on July 14.