

The Nautilus Space Mission: Unveiling the Origin of the Diversity of the Asteroid Belt and of Earth Water

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Lamy Philippe^{1*} ; Vernazza P¹ ; Castillo-Rogez J² ; Beck P³ ; Nautilus Team⁴
LAMY, Philippe^{1*} ; VERNAZZA, P¹ ; CASTILLO-ROGEZ, J² ; BECK, P³ ; NAUTILUS, Team⁴

¹Laboratoire Astrophysique de Marseille, ²Jet Propulsion Laboratory, ³Institut de Planetologie et d'Astrophysique de Grenoble, ⁴Nautilus Team
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We present the Nautilus space mission recently proposed to ESA in the framework of the M4 call. The overarching science goal of the Nautilus mission, proposed by a team of European scientists with a strong participation of US scientists and other international scientists, is to explore a volatile-rich asteroid not represented in our meteorite collections (C- or D-type), and ultimately cast light on these aspects of the early history of the solar system. Its payload will allow performing high resolution imaging, ultra-violet, visible, near-infrared, mid-infrared and microwave spectroscopy, mass spectrometry of the gas phase, magnetic field measurements, and radio science. This proposal is supported by a team of ~170 scientists that includes prominent, world-class experts of primitive solar system bodies and of space instrumentation. In this presentation, we will highlight the challenges of this space mission and invite broader support from the international community.