NASA's Psyche mission on track for liftoff next month

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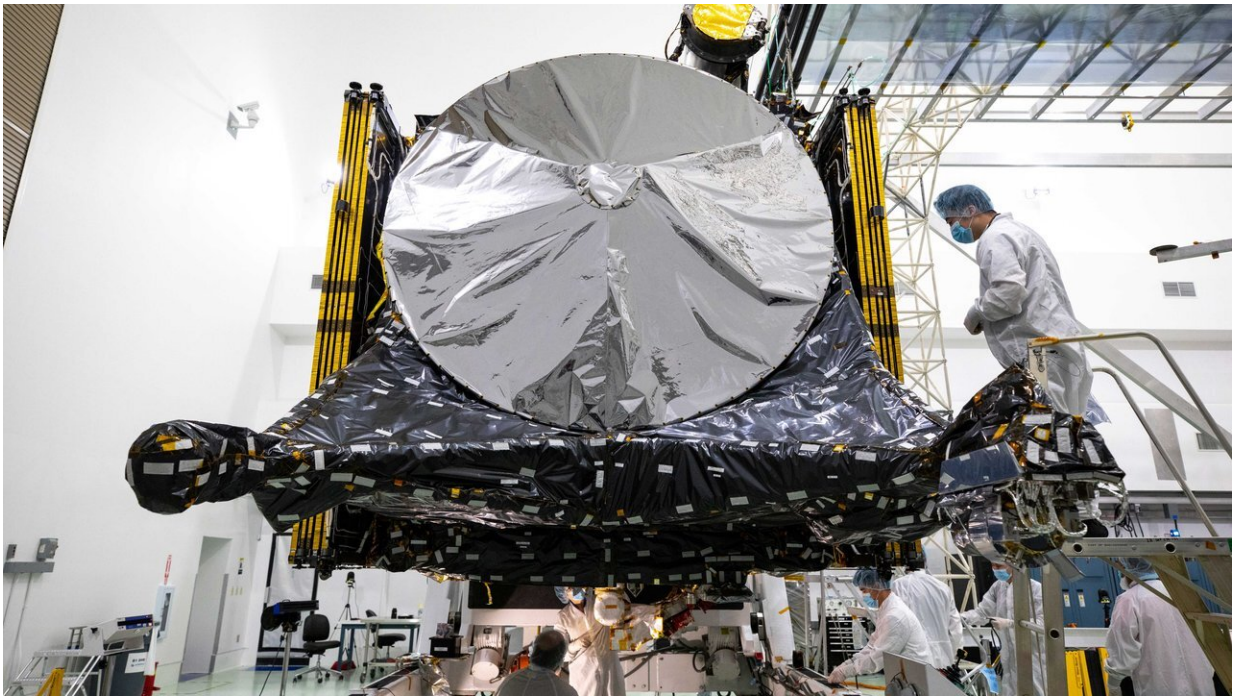


NASA’s Psyche spacecraft will take a spiral path to the asteroid Psyche, as depicted in this graphic, which is labeled with key milestones of the prime mission. The test periods for NASA’s Deep Space Optical Communications (DSOC) technology demonstration are indicated with red dots. Credit: NASA/JPL-Caltech

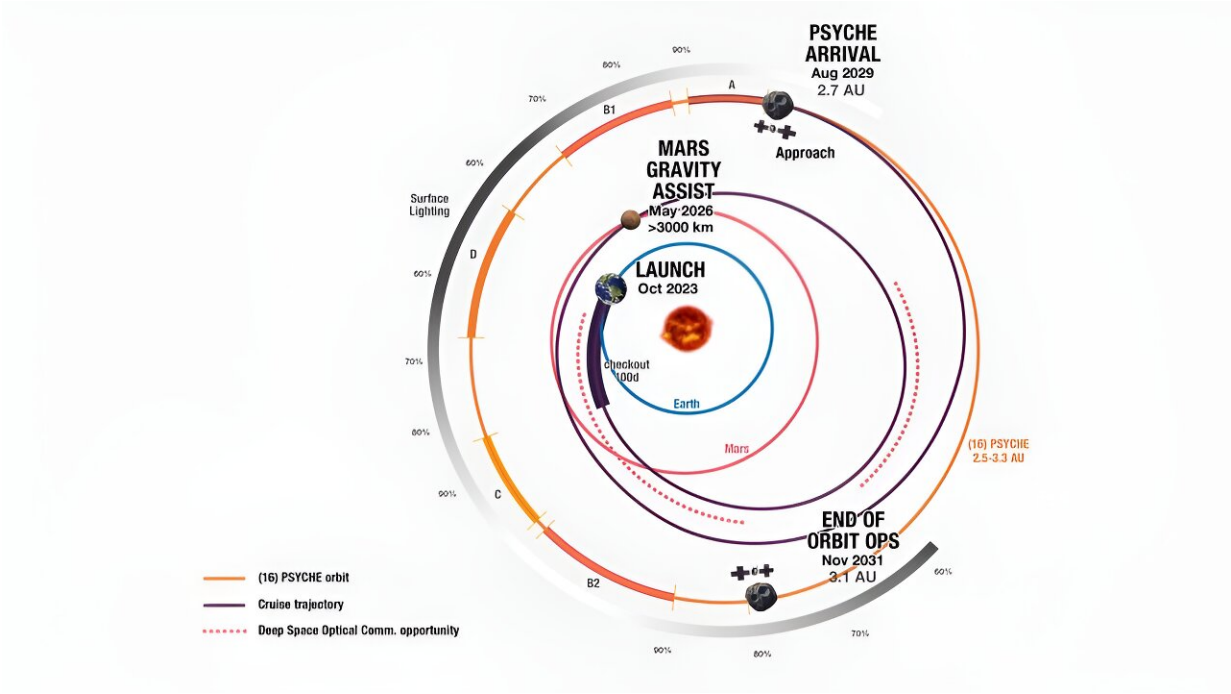
Bound for a metal-rich asteroid of the same name, the Psyche mission is targeting Oct. 5 to launch from NASA's Kennedy Space Center in

Florida.

The spacecraft's solar arrays are folded like an envelope into their stowed position. Xenon gas—fuel for the journey to the asteroid belt—is loaded. All four thrusters have passed their final tests. Engineers have confirmed the massive high-gain antenna is set to transmit data. The software is tested and ready. The science instruments—a multispectral imager, magnetometer, and gamma-ray and neutron spectrometer—that will investigate the asteroid Psyche are poised for action.

NASA's Psyche spacecraft has less than 30 days to go before the opening of its launch period, which runs from Thursday, Oct. 5 through Wednesday, Oct. 25. What the mission learns from the metal-rich asteroid may tell us more about how planets form.

"These missions take so many people and so much meticulous, rigorous, personally driven work," said Lindy Elkins-Tanton, principal investigator for Psyche at Arizona State University. "I am ready to be ecstatic. We all are, but we are not ecstatic yet. Let's launch and establish communications—then we can scream, jump, and hug each other."



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Within two weeks, technicians will begin encapsulating the spacecraft in its payload fairing—the cone at the top of the rocket—and the spacecraft will move to SpaceX facilities at NASA's Kennedy Space Center in Florida. Psyche is set to launch atop a SpaceX Falcon Heavy from the center's Launch Complex 39A at 10:38 a.m. EDT on Oct. 5.

"It's getting increasingly real," said Henry Stone, Psyche's project manager at NASA's Jet Propulsion Laboratory in Southern California. "We are counting the days. The team is more than ready to send this spacecraft off on its journey, and it's very exciting."

After escaping Earth's gravity, Psyche will use solar electric propulsion to accomplish its six-year journey to the asteroid. The efficient propulsion system works by accelerating and expelling charged atoms, or ions, of the neutral gas xenon—creating a thrust that gently propels the spacecraft with a force akin to what you'd feel holding a single AA battery in your hand. Technicians recently loaded 2,392 pounds (1,085 kilograms) of xenon onto the spacecraft over the course of about two weeks.

Measuring roughly 173 miles (279 kilometers) at its widest point, the asteroid Psyche presents a unique opportunity to explore a metal-rich body that may be part of a core of a planetesimal, the building block of an early planet. Once the spacecraft reaches Psyche in the main asteroid belt between Mars and Jupiter, it will spend about 26 months orbiting the asteroid, gathering images and other data that will tell scientists more about its history and what it is made of.

Provided by NASA