

Psyche's mission to a metal world

The Psyche spacecraft's voyage to its namesake asteroid is a unique chance to explore the exposed metal-rich core of an early planet – primordial building blocks that combined under the force of gravity to form our solar system some 4.5 billion years ago

PSYCHE SPACECRAFT

Spectrometer: Measures neutrons and gamma rays from asteroid's surface to determine its elemental composition

ASTEROID PSYCHE
225km in diameter

X-band high-gain antenna

Magnetometers: Determine whether Psyche is primordial unmelted material. Asteroid appears to be more metal-rich than Earth

Solar arrays: 24.7m-wide panels needed to collect sunlight deep in asteroid belt

DEEP SPACE OPTICAL COMMUNICATION

High-bandwidth optical communications. DSOC will send and receive data using near-infrared laser, which can transmit up to 100 times bandwidth of conventional radio wave systems

ASTEROID BELT

Between Mars and Jupiter, some 4 billion kilometres away from Earth

ASTEROID PSYCHE

2026: Mars gravity assist boosts velocity without depleting propellant

MARS

EARTH
Launch: Oct 2023

SUN

CRUISE
About 6 years

ORBITING PSYCHE

2029: Enters orbit – makes four successively closer orbits round asteroid. Data sent to Earth for analysis

2031: End of mission