



Space probe brings asteroid dust back to Earth (图)

<http://www.firstlight.cn> 2010-11-16

A Japanese spacecraft has successfully returned what are the first samples ever obtained from the surface of an asteroid. Using microscopic methods to study the grains, researchers have confirmed that the minerals could only have come from the asteroid and not from contamination of the probe when it landed back on Earth in June.

The Hayabusa mission, operated by the Japanese space agency JAXA, was launched in 2003 to land on the Itokawa asteroid – a 500 m long body that lies around 300 million kilometres away from Earth – and return a sample to Earth by 2007. The craft also had remote sensing instruments onboard, including an X-ray spectrometer, to study the composition of the asteroid before landing on it.

After a few technical glitches, including being hit by a solar flare, Hayabusa's return home was delayed by three years. It eventually landed in late June in the Woomera Prohibited Area in Southern Australia, and the recovered probe – which was largely intact – was then sent back to Japan for examination.

Using a scanning electron microscope, scientists at JAXA announced today that around 1500 grains have been identified as extraterrestrial in origin in the Hayabusa samples. The recovered minerals include olivine, pyroxene, plagioclase and iron sulphide. Although these minerals are found on Earth, the abundance of iron and magnesium in the minerals is different on Earth to that on the asteroid.

The composition of the grains, which were around 10 µm in diameter, matched the measurements taken by the X-ray spectrometer onboard Hayabusa before the craft landed on Itokawa. This ruled out the possibility that the signal was contaminated by terrestrial materials as the probe crashed back to Earth.

"It is a world first and a remarkable accomplishment that [Hayabusa] brought home material from a celestial body other than the Moon," Japan's science and technology minister, Yoshiaki Takagi, told a news conference in Tokyo.

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