





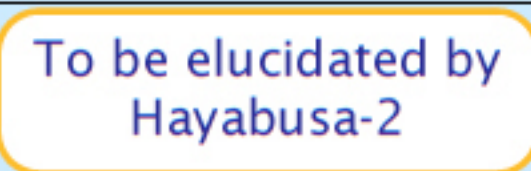


# From Hayabusa to Hayabusa-2

Our next scientific quest for novel and significant discoveries, based on establishment of technologies demonstrated by Hayabusa

	Hayabusa	Hayabusa-2
Spacecraft		
Objectives	Technological Demonstrations for Deep-Space Roundtrip Exploration	Sample-Return from C-type Asteroid and Establishment of Reliable Deep-Space Roundtrip Exploration Technologies
S/C Size	1m x 1.6m x 1.1m (Main Body)	1m x 1.6m x 1.25m (Main Body)
S/C Weight	510 kg (Wet)	Approx. 600 kg (Wet)
Launch Date/Vehicle	9 May 2003 / M - V Rocket No.5	FY2014 / H-II A Rocket (Planned)
Propulsion System	Ion Engine / Chemical Thrusters	Ion Engine / Chemical Thrusters (improved)
TX Antenna	X-band Parabolic Antenna	X-band/ <b>Ka-band</b> Planar Antenna
Mission Instruments	Near IR Spectrometer (0.85-2.1 $\mu$ m) X-Ray Fluorescence Spectrometer Multiband Imaging Camera Laser Altimeter MINERVA (Failed to land) Sampler Reentry Capsule	Near IR Spectrometer (1.8-3.2 $\mu$ m) Thermal IR Imager (Observes thermal inertia) Multiband Imaging Camera Laser Altimeter MINERVA II <b>Small Rover MASCOT (Germany)</b> <b>Small Carry-on Impactor, Deployable Camera</b> Sampler Reentry Capsule
Stay at Asteroid	About 3 months (Exploration Phase)	About 18 months
Sampling	Twice (only surface)	3 times (surface & subsurface)
Return to Earth	13 June 2010	End of 2020 (Planned)
Target Asteroid	  	
Spectral Type	S-type ( <b>S</b> tony)	C-type ( <b>C</b> arbonaceous)
Asteroid Size	535m x 294m x 209m	0.87 $\pm$ 0.03 km (Axis Ratio=1.3:1.1:1.0)
Orbit	Near Earth Asteroid (Apollo)	
Structure	Rubble-Pile 	Unknown 
Average Density	1.90 $\pm$ 0.13g/cm <sup>3</sup>	Unknown
Geometric Albedo	0.25 $\pm$ 0.03	0.070 (local variation: $\pm$ 0.012)
Rotational Period	12.132 hours (retrograde)	7.6 hours
Evolution Period	1.52 years	1.30 years

