

SPACE EXPLORATION SYMPOSIUM (A3)
Small Bodies Missions and Technologies (5)

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HAYABUSA-2, NEXT ASTEROID SAMPLE RETURN MISSION OF JAPAN

Abstract

Hayabusa, which is the first sample return mission from an asteroid, has revealed the strange nature of a small near earth asteroid, Itokawa. Hayabusa is now in the final stage of its seven year mission, and it will come back to the Earth in June of this year (2010). If we can get the sample of Itokawa, we will know much further things about the materials on the surface of asteroids. While working for Hayabusa, we have a long discussion about missions that follow Hayabusa, and one of them is what we call Hayabusa-2. Hayabusa-2 is an asteroid sample return mission, but the target asteroid, 1999 JU3, is C-type, while Asteroid Itokawa is S-type. C-type asteroid is thought to be abundant in organic matters and hydrated compound, so we think it has important clues to solve the origin and evolution of the life. In the early discussion, we assume that the spacecraft of Hayabusa-2 is almost the same as that of Hayabusa, so that we can make the spacecraft as soon as possible to launch in 2010 or 2011. In this case, the missions of Hayabusa-2 are almost same as those of Hayabusa. However we could not start Hayabusa-2 mission because of the budget problem, and we missed the launch windows in 2010 and 2011. Now we are aiming to launch it in the next launch window in 2014 or 2015. Since we have more time to study, we are considering new mission in Hayabusa-2, that is "impactor". In the new idea of Hayabusa-2, it has an impactor, which will collide to the asteroid to make a small crater. Then we can get the sample from sub-surface region. We have studied two kinds of impactor, one is a separate spacecraft and the other is a small carry-on impactor. In this paper, we will show the current status of Hayabusa-2 mission.