

The Hayabusa2 Near-infrared Spectrometer (NIRS3): Toward Best Science at Asteroid Ryugu

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The Hayabusa2 spacecraft is on the way to the target asteroid Ryugu and will start its proximity operation in July 2018. The spacecraft is equipped with a near-infrared spectrometer (NIRS3), which is the key instrument for mapping the distribution of hydrated minerals on the asteroid surfaces. Ryugu is a sub-km sized near-Earth asteroid having the similar spectral features with carbonaceous chondrites, and 0.7-micron absorption band, which implies the existence of hydrated mineral, was detected once from ground-based observations. Since aqueous alteration that generates hydrated minerals never occur with the current small size of Ryugu, it can be expected that Ryugu would be composed of rock fragments of large parent body. Thus, in order to get a clue as to how such primitive hydrous asteroids evolved, we aim at revealing the distribution of hydrated minerals on the surface of Ryugu by using NIRS3 instrument. In addition, Hayabusa2 is a sample return mission so that NIRS3's spectral data will be utilized as information to select the sampling site. Integrated science with other instruments and laboratory experiments in support to interpret the spectral data are essential to maximize science output from asteroid observations. We have worked on these tasks with other instrument team and NASA selected participating scientists since the spacecraft launch. From those activities, we have got the significant results and all the preparations for the arrival at Ryugu are completed.

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