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The knowledge of hydrated minerals among asteroids is important for understanding a wide range of solar system formation, evolutionary processes, and thermal history. Formation of hydrated minerals occurs in environments where anhydrous rock and water are together. Since the hydrated mineral stably exists above the sublimation temperature of ice, it becomes an important marker indicating the presence of water, which does not reset by temperature change after formation. In order to explore the existence of water in the present solar system, it is necessary to investigate the presence of hydrous minerals and water ice on various asteroids. Water ice and hydrated minerals show absorption features in the observed spectrum, especially in the 3-micron band. However, since observed spectrum with a ground-based telescope in 2.5-2.85 micron is strongly affected by telluric absorptions, it is desirable to use space-borne telescopes to perform accurate observations for the identification of mineral species.

The Japanese infrared astronomical satellite AKARI, launched in 2006, had the capability of spectroscopy in targeted observation mode. Low-resolution spectroscopic observations were performed using the near-infrared channel (2.5-5 micron) of the Infrared Camera (IRC) on board AKARI, which provide valuable data because of its high sensitivity and unique wavelength coverage. We carried out a spectroscopic survey of asteroids with the IRC. In the warm mission period of AKARI (called Phase 3), 147 pointed observations for 66 asteroids were performed in the grism mode of 2.5-5 micron band.

The observed objects comprise 23 C-types, 17 S-types, 22 X-types, 3 D-types, and 1 V-type. From these observations, most C-type asteroids (17/23) were found to show a clear absorption feature related to hydrated minerals at a peak wavelength of around 2.7 micron. On the other hand, no S-types (17) have any clear absorption in this wavelength region. Some X-types (3/22) and D-types (1/3) have absorption feature like C-types.

In this talk, we present the results of the near-infrared asteroid spectroscopic survey with AKARI, and discuss the distribution of hydrated and/or hydroxylated minerals on asteroids in the main belt region.

キーワード：asteroids、hydrated minerals、near-infrared spectroscopy
Keywords: asteroids, hydrated minerals, near-infrared spectroscopy

