

Characteristics of high-albedo C-complex asteroids

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Almost C-complex asteroids have albedo values lower than 0.1, but there are some high-albedo C-complex asteroids with albedo values exceeding 0.1.

To clarify the nature and origin of high-albedo C-complex asteroids, we conducted spectroscopic observations of the asteroids in at visible and near-infrared wavelength regions.

The Bus B-, C-, and Ch-type asteroids with high-albedo values, which are subclasses of the Bus C-complex asteroids, are classified as DeMeo C-type asteroids with concave curvature, B-, Xn-, and K-type asteroids. Analogue material such as CV/CK chondrites, enstatite chondrites/achondrites, and salts related with these spectral types of high-albedo asteroids are thought to be composed of minerals and material exposed to high temperatures.

A comparison of the results obtained in this study with the SDSS photometric data suggests the following three possibilities.

High-albedo C-complex asteroids that do not belong to any families are likely to be impact-metamorphosed carbonaceous chondrites, CV/CK chondrites, or enstatite chondrites/achondrites.

The high-albedo C-complex asteroids in other C-complex families were likely sourced by impact heating. Salts may have occurred in the parent bodies of 24 Themis and 10 Hygiea, as well as 2 Pallas.