NEW K TYPE ASTEROIDS. James C. Granahan, Greg Smith, and Jeffrey F. Bell (Planetary Geosciences, Dept. of Geology & Geophysics, SOEST, University of Hawaii, 2525 Correa Rd., Honolulu, HI 96822)

Several new K type asteroids were identified during near infrared spectral observations on July 30, 1992 at NASA's infrared telescope facility (IRTF) at Mauna Kea, Hawaii. These K asteroids are 513 Centesima, 633 Zelima, 1129 Neujmina, 1416 Renauxa, 1799 Koussevitzky, and 1883 Rauma. A K asteroid is an asteroid which possesses a S type spectra in visible wavelengths and a C type spectra visible in near-infrared wavelengths [1]. These objects are usually misclassified as S asteroids on the basis of visible spectra alone. This type was first detected by the 52 infrared color asteroid survey [2] also conducted at the IRTF . Our observations utilized a new seven color infrared asteroid filter system [3] which allows near-infrared data to be collected from asteroids as faint as 16th V magnitude.

Figures 1 & 2 illustrate the near-infrared characteristics of a newly classified K asteroid. Remember that all of the asteroids discussed in this paper have been classified as S asteroids [4] as determined by studies of their visible spectra. Figure 1 shows the spectral comparison of the new K asteroid 513 Centesima with a S asteroid 7 Iris. Figure 2 shows the spectral comparison of the new K asteroid 513 Centesima with a previously classified K asteroid [1] 221 Eos. The data for 7 Iris and 221 Eos were collected during the 52 infrared color asteroid survey [2]. The data for 513 Centesima was collected with a seven color asteroid filter system [3]. All data were normalized with respect to their 1.5 micron values.

All of the 3 previously known K asteroids were also Eos asteroid family members [1]. These objects, like 221 Eos, have a spectra analogous to that of CV and CO carbonaceous chondrites [1]. This material characterization of K asteroids is important in understanding the geology of the Eos family. In the Williams Eos asteroid family [5] and the Zappala Eos asteroid family [6] the member asteroids are predominantly a mixture of differentiated (S asteroid) materials and primitive (C asteroid) materials according to the visible spectra [7]. Such an asteroid family can not be derived from the disruption of a single parent body. The four 52 color infrared observations [2] combined with our 8 new infrared observations of Eos family asteroids indicate a different trend. These 8 new infrared observations classified the asteroids 513 Centesima, 633 Zelima, 1129 Neujmina, 1416 Renauxa, 1799 Koussevitzky, and 1883 Rauma as K asteroids and the asteroids 1148 Rarahu and 3028 1978 TA2 as S asteroids. The 52 color asteroid survey [1] collected spectra from the S asteroid 639 Latona and the K asteroids 221 Eos, 653 Bernike, and 661 Coelia. Nine of these objects are K asteroids and three are S asteroids. Hence, the Eos family is most likely to be derived from the disruption of a primitive K type parent body with a few interloping differentiated S asteroids. All other major asteroid families have been described as the result of the impact disruption of their respective singular parent bodies.

References:

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Figure 1

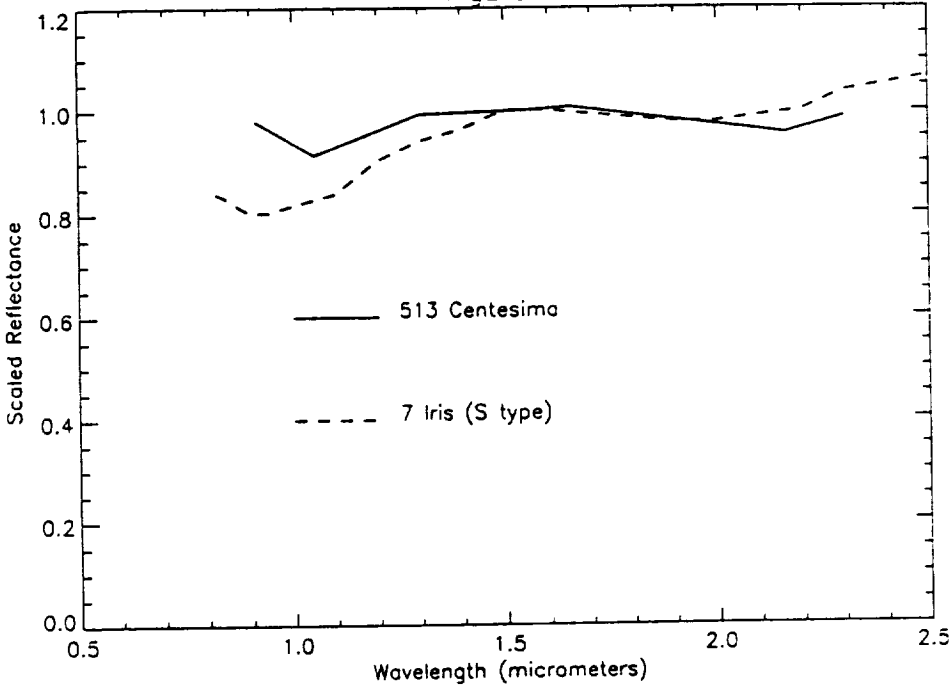

Figure 2