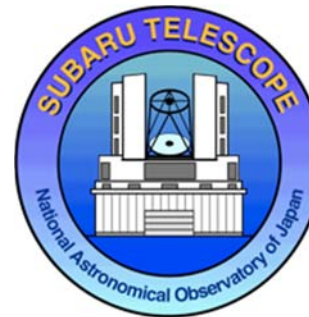


High-albedo C-type asteroids in the outer main belt: AKARI and Subaru observations



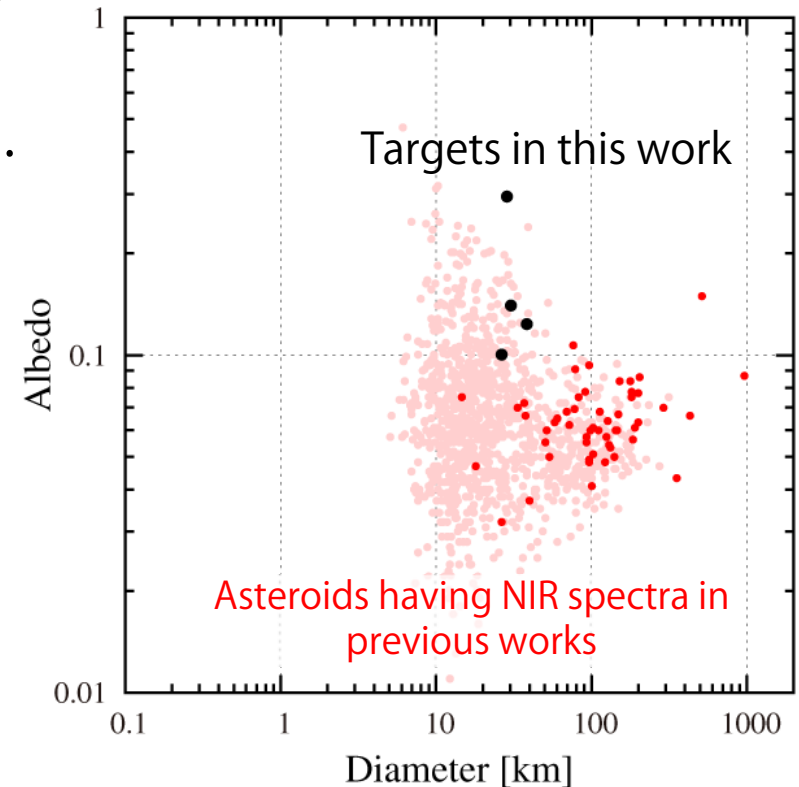
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Daisuke Kuroda⁽²⁾, and Takafumi Ootsubo⁽⁴⁾

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High-albedo C-complex Asteroids in the Outer Main Belt: The Near-infrared Spectra
Kasuga, et al. (2013) AJ 146, 1

High-albedo C-type asteroids in the outer main belt

- Most C-type asteroids are considered as low albedo dark objects and are associated with carbonaceous chondrites (Chapman+ 1975).
- Recently high-albedo C-type asteroids were identified with the infrared astronomical satellite AKARI.
- Ice or frost may exist on surface of C- or D-type asteroids in the outer main belt (Campins+ 2010; Rivkin&Emery 2010; Licandro+2011; Fernández+ 2009).
- There is no NIR spectroscopic survey for water ice on high-albedo C-type asteroids.



1150 C-type asteroids
observed with AKARI

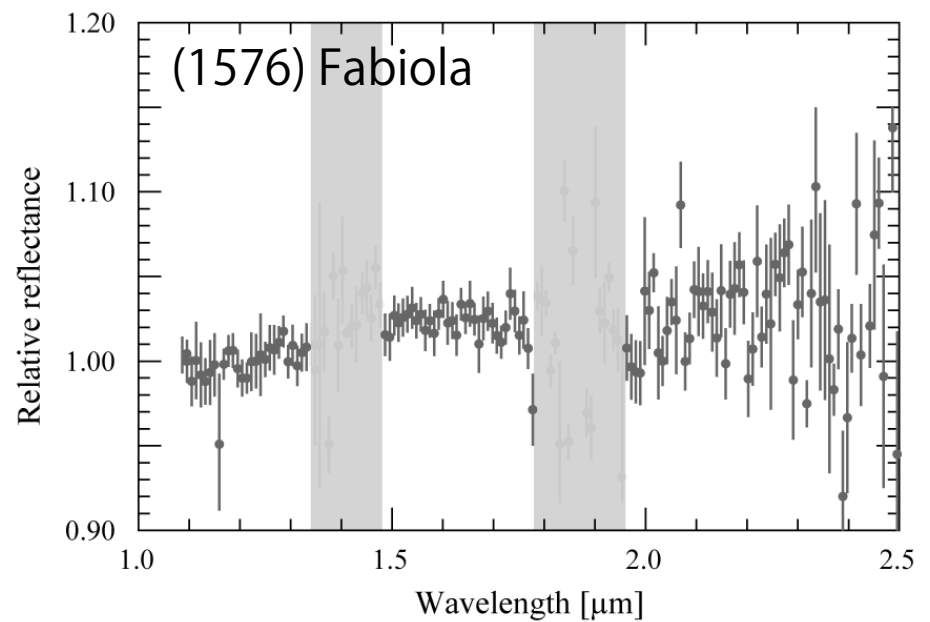
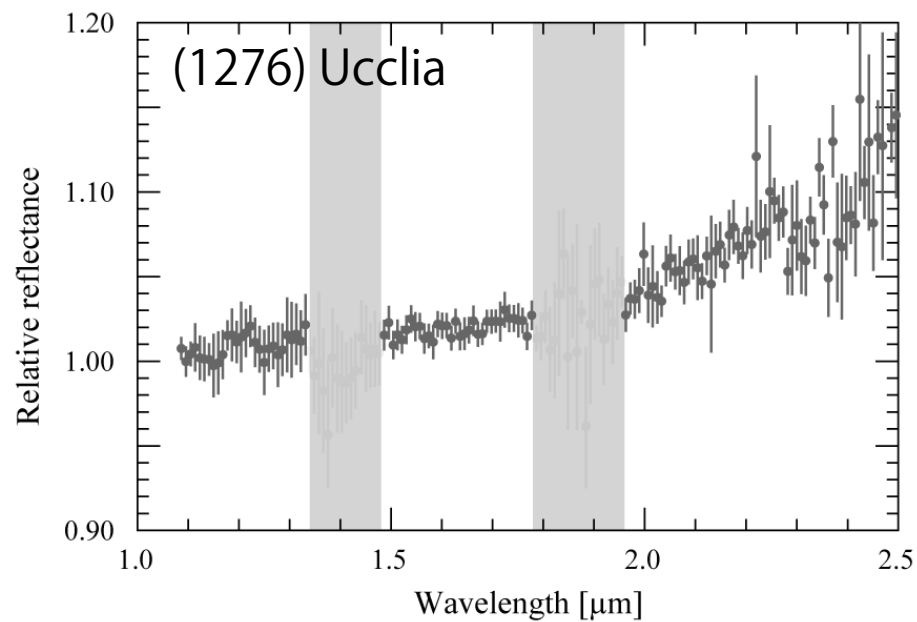
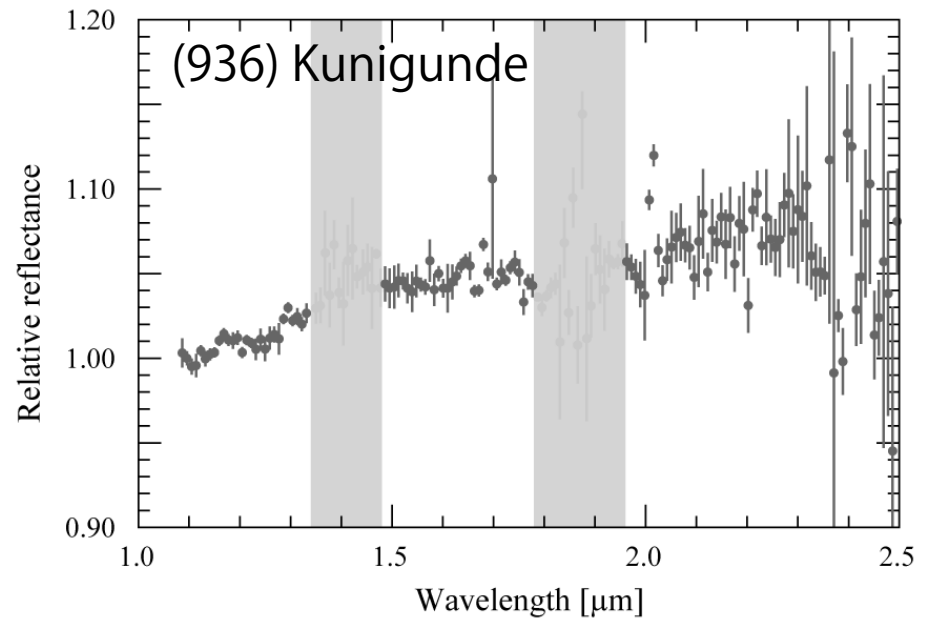
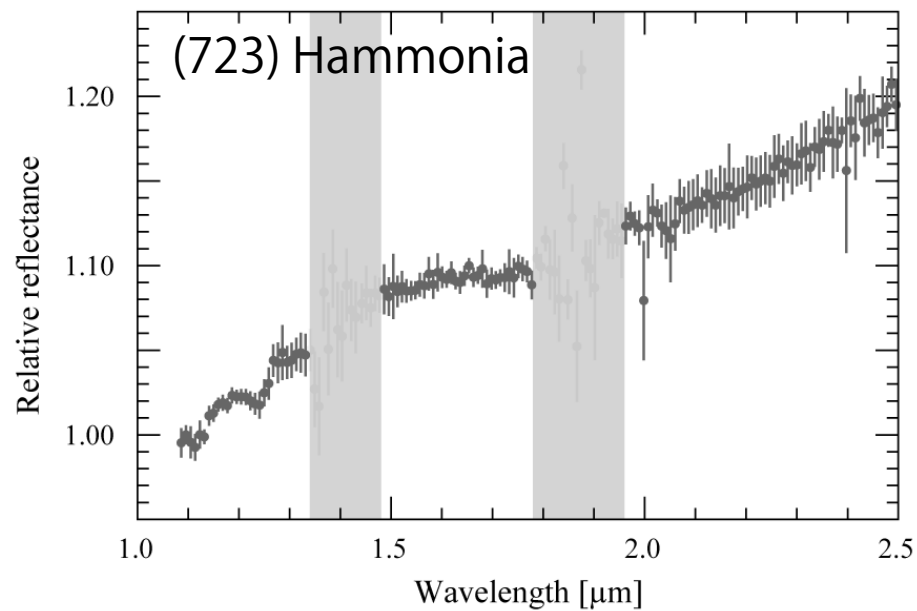
Observations with the Subaru Telescope (2012/02/16 UT)

- IRCS + AO188 (asteroids as NGS), non-sidereal tracking
- 52mas, JH + HK grism spectroscopy, slit = 0.9 arcsec ($\lambda/\Delta\lambda \sim 130$)
- exposure : 120 sec \times 4 -- 180 sec \times 8

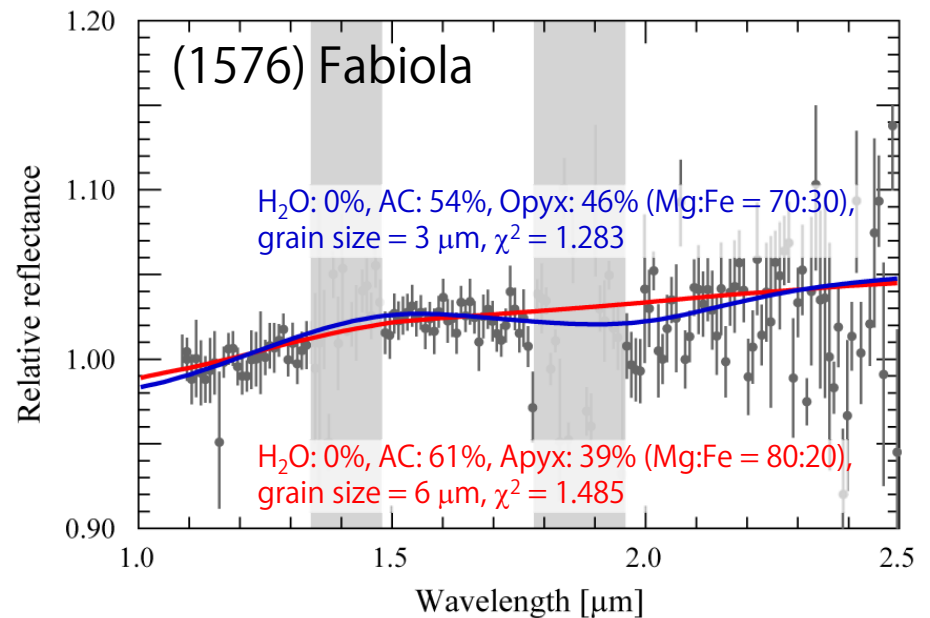
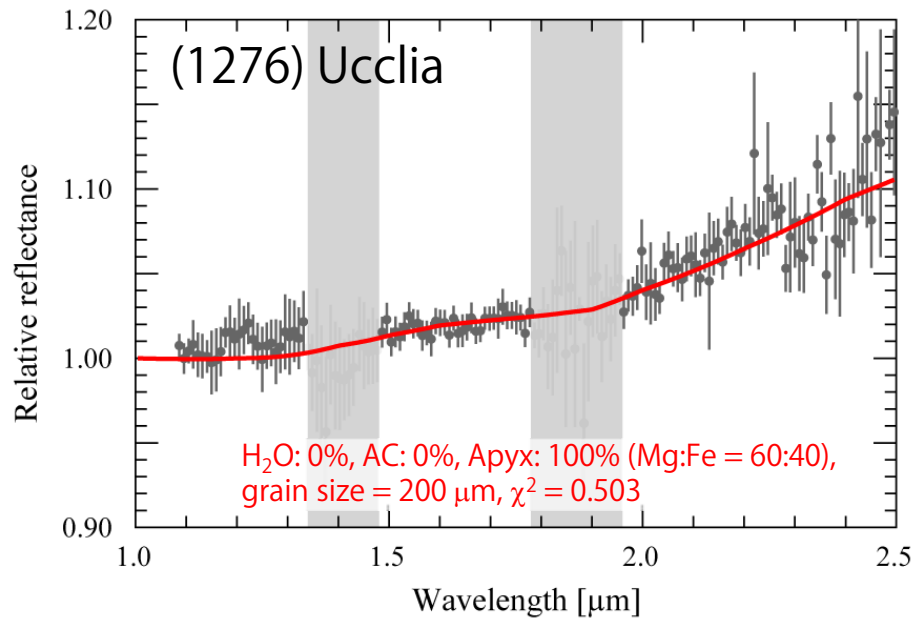
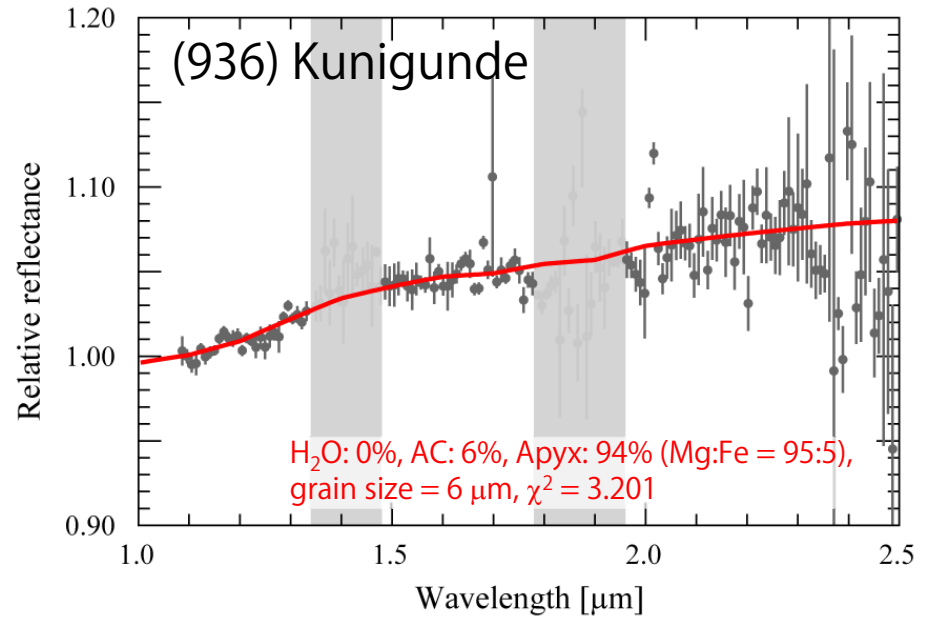
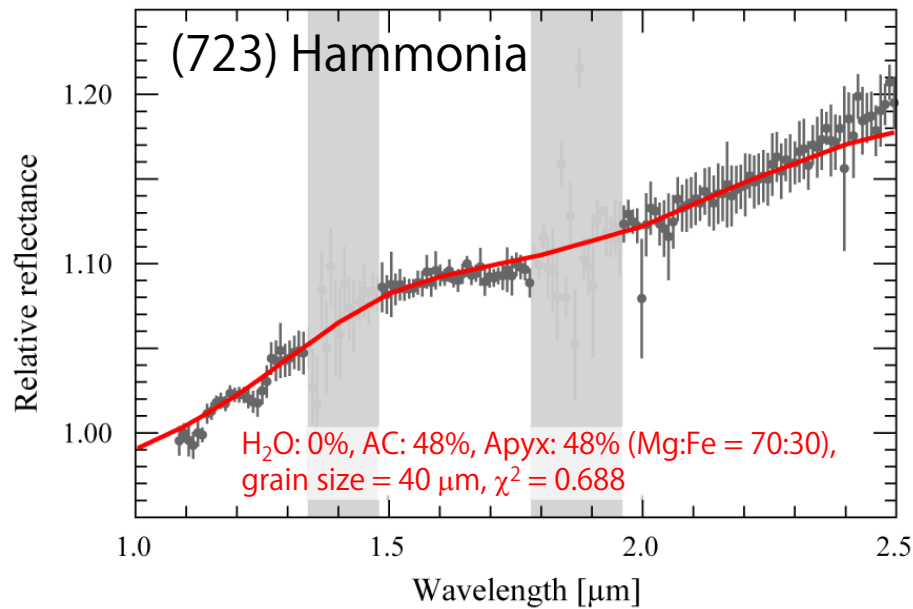
	a [AU]	e	i [deg]	d [km]	p_v	type	r_H [AU]	V_{mag}
(723) Hammonia	2.995	0.054	4.99	28 ± 1	0.29 \pm 0.03	C	3.088	14.68
(936) Kunigunde	3.131	0.178	2.37	38 ± 1	0.12 \pm 0.01	B	3.682	15.19
(1276) Ucclia	3.177	0.095	23.28	30 ± 1	0.14 \pm 0.01	C	2.935	14.92
(1576) Fabiola	3.146	0.168	0.95	26 ± 2	0.10 \pm 0.02	B	3.548	16.97

(as of 2012/02/16)

Results



Fitting with intimate mixture model



Summary

We carried out NIR spectroscopic observations for high-albedo C-type asteroids using Subaru/IRCS+AO188 to investigate the compositions of these objects.

- Water ice absorption features near 1.5 and 2.0 μm were not detected in our four targets.
- Featureless or possible weak broad absorption band of these asteroids can be reproduced by Mg-rich (60 -- 95%) amorphous pyroxenes (or, crystalline silicates).
 - The results imply that Mg-rich silicates are responsible for high albedo of these C-type asteroids (c.f., Emery&Brown 2004; Lucey&Noble 2008).

