Analyses of drilled and surface samples of Ries, Sierra Madera and Takamatsu craters

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Example Co, Ni and Ir contents of drilled samples

Iron-group elements (Fe, Ni, Co) and platinum-group element (Ir) are measured on drilled samples of Ries (1,000m in depth) and Takamatsu (930m and 960m in depth), compared with surface breccias of Sierra Madera (Texas, USA) as shown in Fig.1.

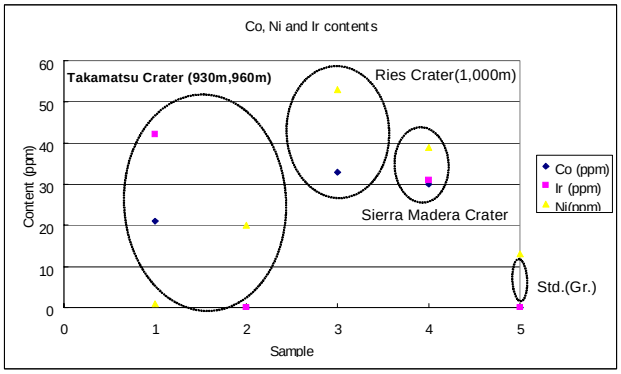
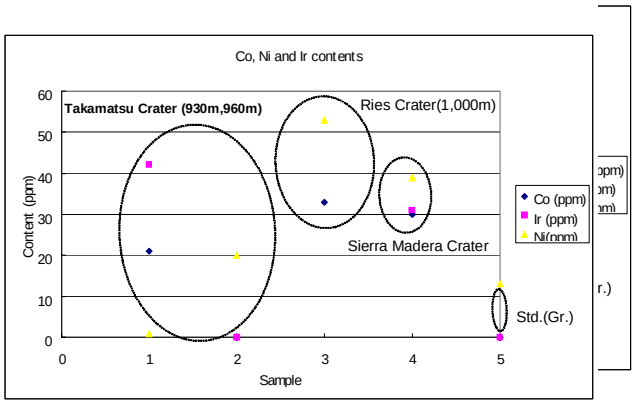


Fig.1. Co, Ni and Ir contents of Ries, Takamatsu and Sierra Madera cratres.

Discussion

Meteoritic craters show considerable amounts of iron-and plat[illegible]



Significance of chloritite bodies found from the dike-gabbro transision of the Oman ophiolite

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Chloritite body with abnormal bulk compositions was first found from the south branch of Wadi Hilti area in the northern Oman ophiolite (Neo *et al*., 2004 JPGU meeting). Furthermore, another chloritite bodies were found from two localities, north-branch of Wadi Suhayli and north-branch of Wadi Bani-Umar. These three bodies have a similar size and extend about 100x70 m. Original textures are completely obliterated except for a remnant of the primary grain-size. The chloritites are composed of iron-rich chlorite with accessory epidote, titanite, hydrated rutile (anatase) and apatite.

It should be emphasized that these three bodies occur at the same stratigraphic position, i.e., uppermost horizon of the upper gabbro unit, corresponding to a root zone of sheeted dike complex. Sharp but gradual contacts between the black bodies and host rocks (mainly varitextured gabbro and dolerite dikes in places) confirm that the black bodies were altered products. The fact that they occur at the same stratigraphic horizon suggests strongly that the genesis of the chloritites is controlled by a stratigraphic control.

Chlorites of the chloritites are more Fe- and Al-rich than those of host rocks. Surprisingly, calcic plagioclases that are invaded by chlorites along the margin of the chloritites keep the primary composition. These lines of evidence suggest that temperature condisions during the hydrothermal alteration were higher than grennschist facies conditions. Abundant epidotes occur near the margin of the chloritites, but decrease rapidly away from the contact (inward the chloririte body).

Bulk rock compositions of the chloritites show that they underwent very intensive metasomatism during the hydrothermal alteration. That is, severe removal in SiO_2, CaO and LIL elements, and large uptake in FeO characterize the chloritites. Such types of the alteration is not known from the hydrothermal system beneath ocean ridges, but we believe that the black bodies found in the Oman ophiolite may give a new aspect on the hydrothermal system.