THE CHROMITE-WHITLOCKITE-PLAGIOCLASE ASSOCIATION IN THE RAGULI (H3-4)
CHONDRITE: MINERAL COMPOSITION AND MORPHOLOGY.

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The Raguli meteorite is an ordinary chondrite of petrological type 3-4 and is significantly oxidized by weathering on Earth. It is characterized by shock effects and brecciation [1],[2].

Chromite-rich inclusions from this chondrite have been studied by optical microscopy, by SEM and EPMA. The descriptions of the contained chromite-whitlockite-plagioclase+feldspar objects are reported here. Peculiarities of morphology and structure allow these objects to be divided into inclusions, chondrules and mineral fragments [3].

The inclusions are characterized by rounded or irregular form, vary in size from 50 to 250 mm, and are composed of chromite, a plagioclase-feldspar mesostasis and whitlockite (fig. 1 a-h). Rarely troilite and Fe,Ni-metal are also found.

The chromite forms a dense compact core of inclusions, and towards the peripheral zone changes to aggregates of small grains of chromite embedded in a plagioclase-feldspar mesostasis. In one of the inclusions, chromite is surrounded by Fe-oxides developed on Fe-Ni-metal (fig 1 e,f). A glassy mesostasis borders the chromite core and in some cases composes the central part of the inclusions (fig. 1 c, d). Whitlockite occurs in the peripheral zone of objects as a rule and rarely constitutes the core, forming Wh-inclusions in chromite.

One of the chromite chondrules consists of a chromite, Pl-mesostasis and ilmenite, and partly is bordered by whitlockite in which euhedral chromite grains occur [4]. A whitlockite microspherule in contact with troilite is found in one of the microporphyritic olivine chondrules and its periphery consists of small Chr-grains (fig. 1 g, h). It should be noted that similar whitlockite microspherules have been found in ordinary chondrites of petrological types 3-6 [5], and in close association with Fe, Ni-metal. Peculiarities of chemical composition and assumed genesis of these inclusions are reported in the next paper [6].

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Fig. 1. Chromite (Chr)-whitlockite (Wh)-plagioclase (Pl) association in the Raguli chondrite. Ox-Fe-oxides, Tr-troilite.