HIGHLY POROUS AGGREGATES WITHIN THE SARATOV (L4) AND GALKIV (H4) CHONDRITES
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Three highly porous (HP) silicate fragments were found in the chondrite Saratov [1, 2]. An additional search showed that HP aggregates are common in the unequilibrated chondrites Saratov and Galkiv [3].

Here we present mineralogical data for two HP aggregates from Galkiv and four from Saratov. They are arranged within a matrix of the chondrites and vary in size from 0.4 × 0.7 mm to 3.0 × 4.3 mm. One of them is surrounded by a fine-grained, dense silicate rim. The rest show diffusional boundaries with the matrix. Mineralogically, the aggregates resemble each other and differ from a host of the chondrites by unusually high porosity (up to 65 vol%), uniform fine-grained texture, and a very low content of metal and troilite. In contrast to the HP aggregates from Galkiv, those in Saratov contain rare porphyritic chondrules and their clasts.

A scanning electron microscopy study displays that HP material is composed of a friable aggregate of rounded and anhedral silicate grains and euhedral crystals of submicron and micron sizes.

The major mineral phases for HP aggregates from both Galkiv and Saratov are olivine (Fa17.1–18.3 and Fa22.2–26.3, respectively) and Ca-poor pyroxene (Fs54.1–57.2, En45.8–47.9, Wo47.2–48.7, respectively). The minor are Ca-rich pyroxene (Fs53.9–55.2, En43.6–46.4, Wo46.3–47.5) and merrilite (45.7–46.9 wt% CaO; 42.6–48.4 P2O5; 3.42–3.62 MgO; in taenite and 3.82–5.3 wt% Ni and 0.74–1.15 Co in kamacite from Saratov), troilite, merrilite (45.7–46.9 wt% CaO; 42.6–48.4 P2O5; 3.42–3.62 MgO; in taenite and 3.82–5.3 wt% Ni and 0.74–1.15 Co in kamacite from Saratov), troilite, merrilite.

The porosity, structure, and mineralogical composition of the HP aggregates are similar to those of some particles of interplanetary dust [4] and, to a lesser extent, to the lunar breccias and agglutinates [5]. This allows us to suppose a similar accretional mechanism for friable aggregates from the chondrites and interplanetary dust. Some of the HP aggregates collected a fine-grained dust that resulted in formation of a dense silicate rim.

The HP aggregates, as separate highly porous bodies or their fragments, were subsequently mixed together with typical unequilibrated ordinary chondrite material. All these constituents accreted to form the meteorite parent body.

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