

# DIVNOE

## Anomalous Achondrite



Found September 1981  
45° 42' N., 43° 42' E.

One mass of 12.7 kg was found in a field after grass-cutting, 36 km southeast of the settlement of the Divnoe, Stavropol region of Russia. It had a rusty brown fusion crust indicating a significant terrestrial residence.

Divnoe is an olivine-rich primitive achondrite with subchondritic chemistry and mineralogy. It contains an opaque-rich fine-grained lithology (ORL) along with patches of pyroxene and plagioclase (PP) within a coarse-grained olivine groundmass (CGL). Veins of troilite and rare metal occur throughout.

Formation of this meteorite began as a chondritic body that experienced 20 wt% partial melting at 1300°C. Crystallization of 60 wt% of the partial melt was followed by the removal of the remaining 40 wt% Na and K-rich liquid portion of the melt. The CGL represents the residue of the melt, the PP represents a partial melt phase that crystallized within the rock, while the ORL was formed late in the partial melt phase by reaction between sulfur vapor and residual olivine. The material was extensively recrystallized during slow cooling from 1000°C to 500°C with a secondary reheating event to 700°C, perhaps caused by separation from the parent body 17.2 m.y. ago. This was followed by low-temperature annealing which erased all shock features and produced the unique olivine lamellar structure.

Divnoe is similar to the brachinites in chemical composition and both oxygen and xenon isotopic ratios. The bulk chemical composition matches that of the brachinites Brachina and ALH84025 very closely. For these reasons it is conveniently included with the brachinites in this classification scheme. The above specimen is a 0.19 g thin cut fragment exhibiting a patch of the rare metal.

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