

Angrite meteorite YA1154 showing dendritic texture

Keizo Yanai[1]

[1] Dept. Civil and Environ., Faculty of Engin., Iwate Univ.

New meteorite specimen YA1154(tentative name) has been identified preliminary as an unknown type of achondrite which consists mainly of fassaite, plagioclase and olivine, with accessory spinel. This specimen shows brownish dark grey interior with tiny black fusion crust. The interior is very fine grained-homogeneous appearances. Under the polarizing-microscope the sections are characterized by the quite unique texture of a very fine grained-holocrystalline lithology which is showing some liner with irregular patterns of slightly elongated brown pyroxene(fassaite)-clear plagioclase and very well elongated dendritic olivine aggregates(Fig.1). This unique textual patten looks like some dendritic textures which apper often in some terrestrial quenched igneous rocks and metamorphosed one.

Pyroxene(fassaite) is the most abundant mineral and have remarkably high FeO/MnO ratio, in which several pyroxenes are within the range of average lunar pyroxenes, but most of them clearly different from pyroxenes of lunar and basaltic achondrites. Olivine is more Fe-rich with wide compositional range Fo_{4.1-35.9}. Plagioclase is remarkably homogeneous and highly calcic, over An₉₇(Fig.2). Bulk chemical composition of the meteorite specimen YA1154 gives 38.3%SiO₂, 0.8%TiO₂ 13.8%Al₂O₃, 23.4%FeO, 7.1%MgO, 15.1%CaO, 0.2%P₂O₅ and 1.2%FeS.

The meteorite specimen YA1154 with angrite composition might be belong to an unusual achondrite angrite, however it is clearly distinguished from the Angra dos Reis(stone)[1] and all other angrites[2,3,4,5] for it's quite unique unusual texture.

Reference: [1] Prinz M. et al. (1977) Earth Planet. Sci. Lett., 35, 317-330. [2] Delaney, J. S. and Sutton, S. R. (1988) Lunar and Planetary Science XIX, 265. [3] Prinz M. et al. (1990) Lunar and Planetary Science XXI, 979-980. [4] Warren P. H. and Kallemeyn G. W. (1990) Lunar and Planetary Science XXI, 1295-1296. [5] Yanai K. (1994) Proc. NIPR Symp. Antarct. Meteorites 7., 30-41.

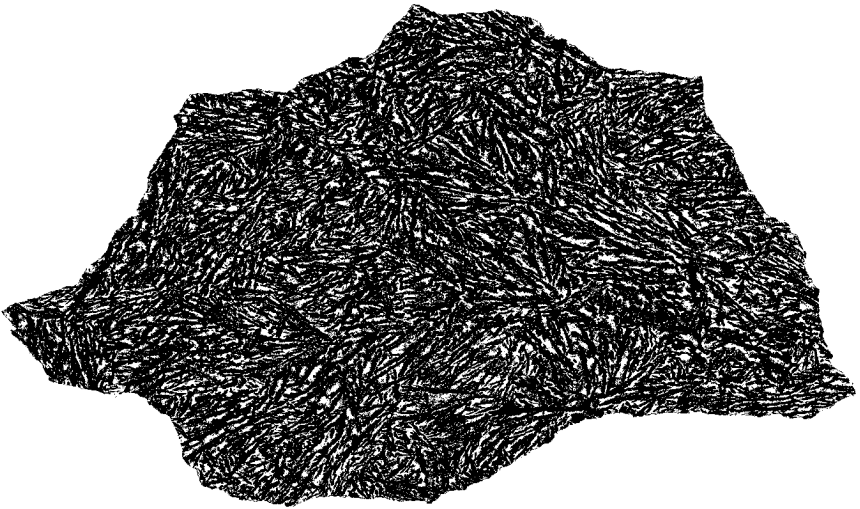


Fig. 1. Photomicrograph of thin section of YA1154 angrite: field of view is 9mm.

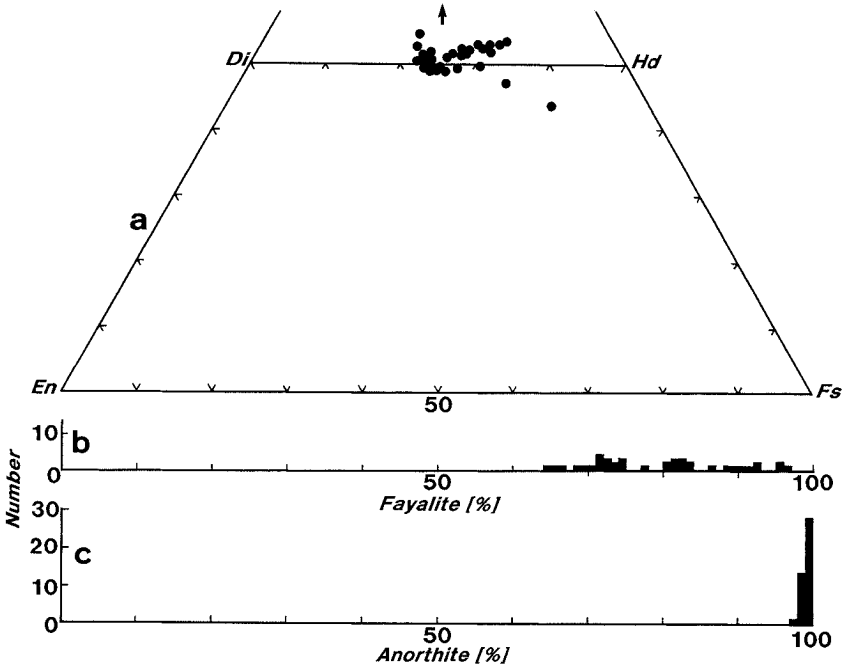


Fig. 2. Composition diagrams for YA1154 angrite. (a) Pyroxene composition on the pyroxene quadrilateral. (b) Distribution of olivine composition varying some wide range of Fa content. (c) Plagioclase is completely homogeneous and is virtually pure anothite.