CHROMITE AND ILMENITE IN THE EUCRITE POMOZDINO. L.F.Migdisova[1], A.A.Yaroshevsky[1,2] [1] V.I.Vernadsky Institute of geochemistry and analytical chemistry, USSR Academy of Sciences, [2] Department of geochemistry, Moscow State University, Moscow, U.S.S.R.

Pomozdino eucrite is a monomict breccia. Its clasts and matrix are composed from pyroxene and plagioclase occuring in very variable proportion (1,2,3). The chemical composition of the main mineral phases (host hypersthene, augite lamellae and plagioclase) is very homogeneous. It is suggested that the meteorite was experinced by subsolidus heating, homogenization and possible recrystallization which eliminated primary crystallization fingerprints. However the detailed study of chromite and ilmenite grains in clasts and matrix shows that these accessory phases have variable chemical composition which can reflect some primary inhomogeneity of the precursor materials and environments.

Abundance of chromite and ilmenite are 0.1-0.2 and about 1 vol.% respectively. These minerals are observed as small (from 10 to 150-300 μm) individual grains included in pyroxenes or matrix material and sometime as chromite-ilmenite intergrowths. Some chromite grains contain thin lamellae of ilmenite. Variations of the chromite and ilmenite chemical compositions are shown on the Fig.1-3. Bimodal Mg distributions (Fig.1) suggest the existence of two series of chromites and ilmenites. Mg contents in the pairs of these minerals are intercorrelated (Fig.2). High Mg and low Mg chromites are characterized by significant variations of Cr, Al, Fe and Ti concentrations (Fig. 3). It is believed that high Mg and low Mg chromite series are two independent crystal fractionation sequences. High Mg chromites contain invariably some quantities of the Ti^{3+} component ($FeTi_2O_4$) and high Ti their members include the ilmenite lamellae.[4] Thick ilmenite lamellae in some grains of high Ti alumochromites coexist with the lamellae and blebbs of troilite which is believed to be resulted from sulfidization of metal phase (Fe) exsolved from ulvöspinel component.

Our observations suggest inhomogeneous environments of the eucrite Pomozdino precursor material crystallization (variation of Mg content, redoxe conditions and S_2 activity) and a definite role of crystal fractionation processes during its solidification.

References. (1) Migdisova L.F., Kononkova N.N., Zaslavskaya N.I. (1988). LPS XIX, pp.776-777. (2) Warren P.H., Jerde E.A., Migdisova L.F., Yaroshevsky A.A. (1989). Proc.20th LPSC (in press). (3) Yaroshevsky A.A., Migdisova L.F. (1989). LPS XX, pp.1225-1226.

Chromite and ilmenite in Pomozdino. L.F.Migdisova et al.

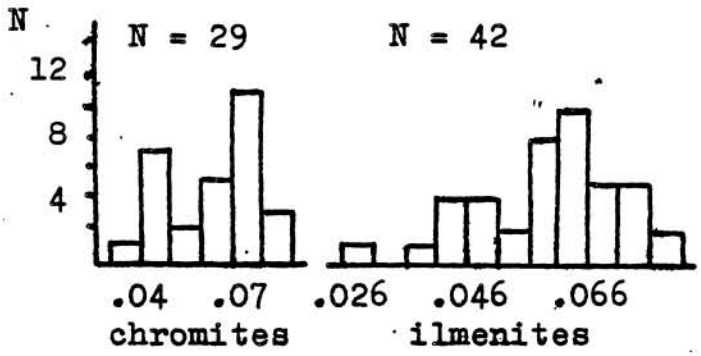

Fig.1. Friquency distribution of Mg content, atomic units.

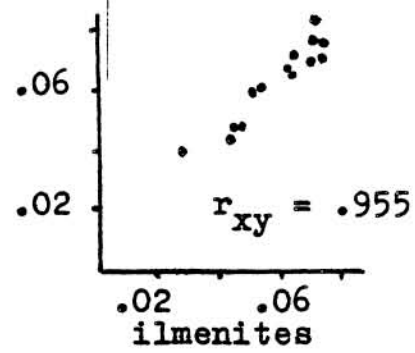

Fig.2. Mg content correlation, atomic units.

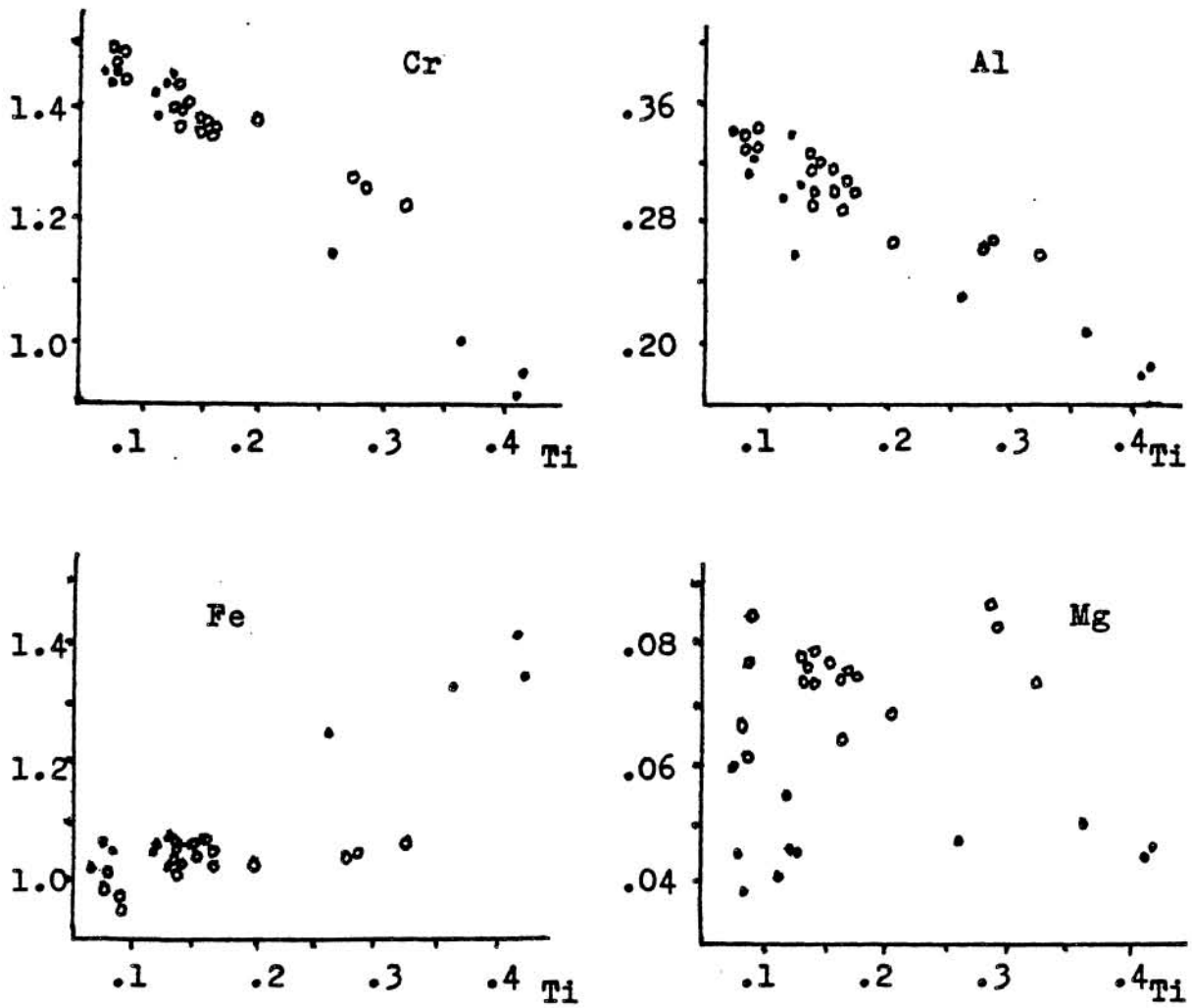

Fig.3. Cr, Al, Fe, Mg and Ti content correlations in chromites, atomic units.
∘ MgO > 1.1 wt.%, • MgO < 1.1 wt.%.