Magnetic susceptibility of Zafarghand granitoidic pluton

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Zafarghand granitoidic pluton (ZGP) is located in the 160 km of NE Isfahan. This pluton is one of the granitoidic pluton of Orumieh Dokhtar structural zone and its lithological composition range includes: gabbro, diorite, granodiorite and granite.. Eocene volcanic and volcano sedimentary are host rocks. This pluton investigated in the light of Anisotropy of Magnetic Susceptibility (AMS) method. 1008 samples were gotten from 123 stations in ZGP. Based on some criterias, magnetic parameters of these samples have been measured in the magnetic lab of Shahrood University of technology by MFK1-FA kappabridge machine. The measured mean magnetic susceptibility (Km in μSI) of the different rock groups are as follows: Gabbros (38120), diorites (26558), granodiorites (16922) and granites (9885). Based on these values gabbros and diorites have higher magnetic susceptibility [F.1].

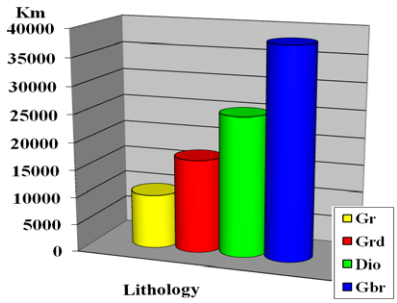

Figure 1: Km- Lithology diagram

This characteristic confirmed by the presence of magnetite in polished sections, thermal magnetic diagrams and Geochemistry analyze. Km values which they are more than (500 μSI) indicate that studied granitoidic rocks are ferromagnetic and correlate with I-type granitoids [1, 2].

[1] Tarling D.H. *et al* (1993) Chapman & Hall, London 217. [2] Bouchez, J.L. (1997) Kluver, Dordrecht, 95-112.

Highly siderophile element and Os isotope systematics of pyroxenite layers from the Lanzo peridotite body (Northern Italy)

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Mantle pyroxenites are believed to represent a minor constituent of the Earth's mantle, but may yield insight into the origin, modification and transport of mafic magma. Mantle sources enriched in pyroxenite have been suggested as explanation for coupled suprachondritic ^{187}Os-^{186}Os signatures in some mantle plume sources [1, 2].

The spinel and plagioclase facies Lanzo peridotite body includes layers of spinel-and plagioclase-bearing websterite, clinopyroxenites and orthopyroxenites up to several dm in thickness. Abundances of highly siderophile elements (HSE) in the pyroxenites display no correlation with Al_2O_3, CaO and Na_2O. Concentrations of Os, Ir, and Ru range from 1 to 0.01 x values in peridotites. Aluminum rich clinopyroxenites show enrichment of Pt, Pd, Au and Re over Os, Ir, and Rh, and initial γ_{Os} (200 Ma) of +25 to +150. Concentrations of Pt, Pd, Au and Re in such samples are only occasionally higher than estimates for primitive mantle values. Aluminum poor websterites are less depleted in Os, Ir, Ru, Rh and display less enrichment of incompatible HSE, with γ_{Os} (200 Ma) of -2 to +43, reflecting a smaller contribution from melt enriched in incompatible HSE. HSE ratios in the pyroxenites range from sub- to suprachondritic (Os/Ir:0.40-1.66, Ru/Ir:0.26-3.70, Rh/Ir:0.23-0.55, Pt/Ir:1.03-26.48, Pd/Ir:0.79-42.92, Au/Ir:0.02-3.75, Re/Ir:0.15-2.67, Pt/ Re:1.96-151.30). Two samples (out of 12) with unusual composition display Pt/Re high enough to develop coupled suprachondritic ^{186}Os-^{187}Os with time as reported for some picrites and komatiites [2].

With the exception of 3 samples, most pyroxenites are correlated in a Re-Os isochron diagram and yield an errorchron date of 1136±120 Ma (^{187}Os/^{188}Os$_i$ = 0.13±0.01). This date is considerable older than the emplacement during the early Mesocoic (200 Ma) but coincides with a Sm-Nd model age of 1200 Ma for the southern Lanzo peridotite body [3].

[1] Luguet *et al*. (2008), *Science* **319**, 453-456. [2] Brandon and Walker (2005), *EPSL* **232**, 211-235. [3] Bodinier *et al*. (1991), *Journal of Petrology- Special Lherzolites Issue*, 191-210.