



Preliminary results of trace element chemistry of almandine crystal from Pütürge metamorphics (Malatya, Eastern Turkey)

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In metamorphic environments, garnet forming reaction is closely related with T-P-t and the chemistry of prolioths. During growth of the garnets, some crystals remain as inclusion and especially partitioning of trace elements with those of inclusions also affect the trace element chemistry of garnets. In this work, crystal chemistry of a large garnet crystal (up to 3 cm) in medium grained schist at Pütürge metamorphics in southern Malatya (Eastern Turkey) was studied. Garnets are commonly euhedral and comprise 15% of the mode. They typically contain elongate quartz, rutile, zircon, monazite and ilmenite aggregates as inclusions. Investigated euhedral garnet is almandine (Alm_{92}) in composition and show slight zonation of Ca being higher in the core and lower at the rims. Garnet has a typical composition of $Alm_{92}Sp_0Prp_4Gs_4$ at the core and $Alm_{95}Sp_{0.3}Prp_4Gs_1$ at the rims. Trace element analyses by LA-ICPMS of euhedral garnet show low to extremely low abundance of Ti (<math><100</math>), Cr (<math><80\text{ppm}</math>), Sr (<math><0.04\text{ppm}</math>), Rb (<math><0.20\text{ppm}</math>), Ta (0.8-4ppm), Pb (<math><1.1\text{ppm}</math>) and Zr (0.8-3ppm). Chondrite normalized rare earth element (REE) data show that garnet is characterized by a wide range of heavy REE contents ($LuN= 25-160$) and strong enrichment of heavy REE over light REE ($LuN/LaN= 250-1600$). Garnet rim contain slightly lower REE contents compared to core. Similarly Y contents are higher in the core (up to 1200 ppm) and lower in the rim (as low as 20ppm). Preliminary results indicate that the garnet crystal growth in a Fe rich prolioth which has very poor trace element content. Host rock-garnet and host garnet-inclusion trace element chemistry are presently being studied.