

Petrogenesis of A-type granites from NW Iran: Geochemical and geodynamic constrains

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A-type granites are mainly located in the NW Iran within Sanandaj-Sirjan zone. They are considered to be emplaced in two episodes, (1) late Triassic to Jurassic, which belong the plutons of Goshchi and Shah Atan dagh and (2) Cenozoic time which belongs to Piranshahr A-type plutons. According to their mineralogical and geochemical characteristics, two subgroups of A-type granites (aluminous and peralkaline) can be recognized. The peralkaline subgroup contains alkali mafic minerals, such as riebeckite, arfvedsonite and sodic pyroxene, while the aluminous subgroup contains annite and Fe-rich calcic- or sodic-calcic amphibole. Based on mineralogical and geochemical characteristics A-type granites of NW Iran belong to peralkaline type. They contain high content SiO_2 , K_2O , Nb, Th, Y, Rb, Ga and total rare earth elements (REE), but lower MgO , CaO , Al_2O_3 , Ba, Ti and Sr. Based on the Nb-Y-Ce triangular discrimination diagram of Eby (Geology, 1992), late Paleozoic to Triassic A-type granites belong to the A1 (anorogenic) type, whereas the Cenozoic granites are A2 (post-orogenic) type. The late Triassic to Jurassic A-type granites have an anorogenic affinity and were possibly associated with extension and rifting to be product back-arc basin which led to the formation of Khoy ophiolites in the studied area. The Cenozoic A-type granites display post orogenic characteristics and can be attributed to post-collisional event related to collision of Arabian plate with micro plate of Iran.

Keywords: Iran, A-type, granite, extension, collision