

Mineralogy and distinguishing protolith of gneisses from northern part of Zayandeh-Rud dam lake in North Shahrekord (Sanandaj-Sirjan zone)

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Abstract: Gneisses of the northern part of the Zayandehrood Dam Lake, structurally, are located in the Sanandaj-Sirjan zone. The gneisses with phengitic marble and metabasic bodies comprise a part of high-pressure units in the North Shahrekord metamorphic complex. Minerlogically, the rocks consist of quartz, garnet, phengite, k-feldspar, albite, tourmaline and rutile with zircon grains. Field (alternation of associated rocks), mineralogical and geochemical evidences are used for determining protolith of the gneisses as igneous source (ortho) or as sedimentary source (para). The geochemical evidences are used such as P_2O_5/TiO_2 vs. MgO/CaO digram, and Niggli values c against al-alk, ti and al-alk, the frequency of Cr and Ni. In addition to, the mineral assemblages indicate a sedimentary protolith (para gneiss). The chemical composition of the protolith is caused by the felsic igneous resources of evolved crust which are plotted in the range of the Late Archean until post Archean in the diagram Ni against Cr. Our findings, especially geochemical evidences, show that the paragneisses have sedimentary source, in contrast to what was previously suggested that they are orthogneiss. The protolith of the paragneisses have been formed in an active continental margin or the back-arc basin.

Keywords: *Niggli values; paragneisses; back-arc basin; active continental margin; north Shahrekord metamorphic complex; Sanandaj-Sirjan Zone.*

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