Petrographical study of paragneisses in Northeast of Golpayegan: 
migmatization and evidences of retrograde metamorphism

M. Hashemi¹, N. Shabanian B.⁎¹, A. R. Davoudian D.¹, H. Azizi²

¹- Faculty of Natural Resources and Earth Sciences, Shahrekord University, Shahrekord, Iran
²- Mining Department, Faculty of Engineering, University of Kurdistan, Sanandaj, Iran

(Received: 16/4/2018, in revised form: 17/7/2018)

Abstract: The studied area, as Ykeh-Chah unit, is a part of Golpayegan magmatic and 
metamorphic complex in Sanandaj-Sirjan structural zone. The unit consists of mylonitized and 
high-grade metamorphic rocks, including biotite-gneiss, biotite-garnet-gneiss, amphibolite and 
orthogneiss. The biotite gneiss and the biotite garnet gneiss have partly been migmatitized. They 
show various structures such as stromatic, pytgmatic, folded, ophthalmitic, net like, and patchy. 
Leucosomes are as in-situ and vein leucosomes. According to the leucosome type and some 
preserved igneous microstructures in leucosome, partial melting of metasedimentary units have 
been the dominant process in the generation of the migmatites. The most reliable 
 microstructural criterion, as the evidences of partial melting in the migmatites, are simple 
twinning in K-feldspar, corroded biotite, plagioclase with zoning, melt presence, symplectic 
replacement aggregates in leucosome and mesosome, muscovitization some of the minerals. 
Due to the presence of leucosome and migmatization process, the rocks have been undergone 
the prograde metamorphism at the increasing temperatures until the partial melting, and finally 
experienced retrograde metamorphism during cooling. Evidence of the retrograde 
metamorphism in the rocks include the emplacement of rutile by titanite and ilmenite, 
symplectite texture (quartz + muscovite), myrmekite texture (quartz + plagioclase), atoll garnet, 
alteration of garnet to quartz and chlorite.

Keywords: Petrography; paragneisses; migmatization; retrograde metamorphism; Northeast of Golpayegan.

*Corresponding author; Tel-fax: (038) 32324423; Email: nahid.shabanian@gmail.com