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Petrology and petrofabric of the metasediments of the West Daran metamorphic complex

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The studied area is located in the Sanandaj–Sirjan zone [1] in the marginal and complex deformation subzone [2]. Based on the protolith, metasediments include metacarbonate, metapelite and metasediments, additionally there are some rocks that seem to be metamorphosed volcanoclastics. Metamorphic grade varies from greenschist to epidote-amphibolite facies.

The most common metasediment protolith is shale and others are arkose and greywacke. Slate and phyllite is concentrated in the north of the region where metamorphic grade is lower than other parts, and when this rock unit is tracked, it disappears in the center of the region where sheared granite occurs. In micaschist, evidence of retrograde metamorphism is clearly observed, for instance in the great majority of micaschist there are casts which are filled by secondary minerals such as chlorite and calcite, additionally biotite is replaced by chlorite. Electron microprobe analyses in the garnet bearing micaschist show that garnets are mainly composed of solid solutions of almandine and spessartine. Comparing relations of inclusions in the garnet porphyroblasts and in the matrix suggests that garnet growth is inter-tectonic.

For understanding the origin of the metasediment protolith and paleo-weathering, following [3] and [4] shows the original weathered rocks were mainly felsic igneous rocks. Comparison of the metasediments and North America Shale [5] revealed significant similarity between them.

Two shear zones are identified in the northern and southern parts of region, otherwise in the center of the region evidence of shear fabric is not observed, where the rocks are metavolcanic and metasediments and the metamorphic grade is lower than units in the shear zones. Shear fabric such as fish porphyroblast and C and C'- type shear bands, oblique foliation and fold asymmetry could be found in sheared rocks. The studied area is part of a metamorphic core complex in the Muteh- Golpayegan area [6].

Three foliations, S_1 , S_2 and S_3 , are distinguished in the metamorphic rocks; S_2 is dominant. S_2 is parallel to the mylonitic foliation. In three parts (north, central and south) of the region the strike of the foliations were measured, revealing that the strike of the foliations are mainly northwest–southeast and dip directions are mainly northeast; however, in the south of the region, close to Zagros thrust, foliation is variable and irregular.

References:

[1] Stocklin J (1968) American Assoc Petroleum Geol Bull 52(7): 1229-1258

[2] Mohajjel M and Sahandi MR (1998) SCIENTIFIC Quarterly Journal Geosciences 8 (32): Summer

[3] Cullers RL and Berendsen P (1998) European J Mineral 10: 987-1002

[4] Bauluz B et al. (2000) Chem Geol 168: 135-150

[5] Haskin LA and Frey FA (1966) Science 152: 299-314

[6] Moosavi E and Mohajjel M (2014) SCIENTIFIC Quarterly Journal Geosciences 23 (91): Spring

