Magmatic evolution and chemical studies of the hydrothermal fluids in the Haftcheshmeh Cu-Mo porphyry deposit, East Azerbaijan, Iran

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The Haft-Cheshmeh Cu-Mo porphyry deposit is located in the Northwestern Iranian Cu–Au–Mo-Fe porphyry-skarn-epithermal metallogenic and magmatic belt. It outcrops ~ 1.8 km^2 and is oriented W–E. It has been penetrated by some 35 drill holes to depths of up to 700 m by NICICO. Proven reserves have currently been evaluated >1800 million tons of disseminated sulfide ore with an average grade of 0.4 % Cu and 0.035 % Mo. The specific purpose of this thesis aims at investigating the magmatic evolution, thermal (P-T-X conditions) and chemical properties of the hydrothermal-magmatic fluids and Cu-Mo mineralization in the Haft-Cheshmeh porphyry deposit, East Azerbaijan. The study is based on geological, petrographic, and geochemical data, especially from stable isotopes and radiogenic isotope data (H-O-S and Sr–Nd–Rb-Sm), microthermometry, laser Raman spectroscopy and LA-ICPMS of fluid inclusions and mineral chemistry (biotite, amphibole and plagioclase).

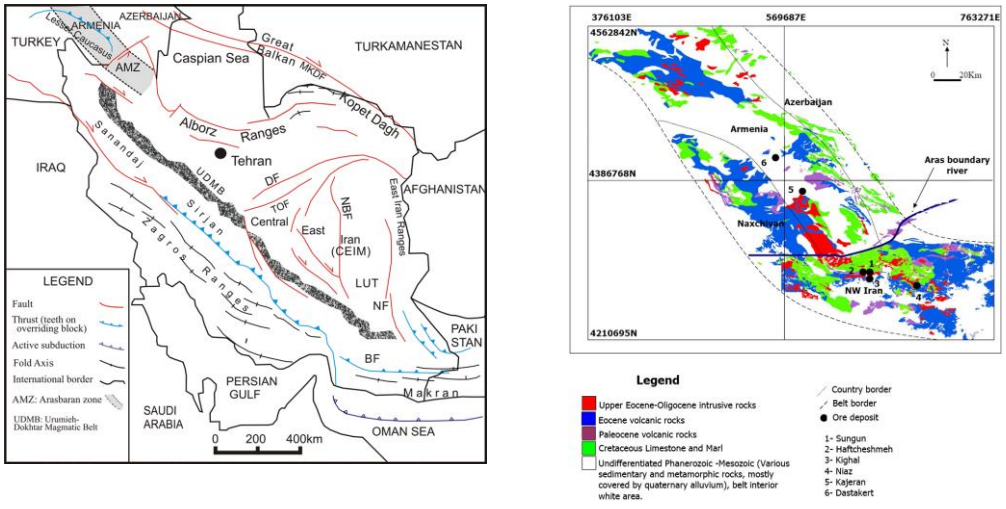

Fig. 1. Geotectonic units (left, after Stocklin and Setudenia (1972)) and sketch regional geological map of Ahar–Arasbaran metallogenic and magmatic belt (CAMB) in Northwestern Iran (right, after Hassanpour et al., 2015) to central and southern parts of Armenia.