



IRANIAN SOCIETY of
CRYSTALLOGRAPHY
and MINERALOGY

Vol. 13, No. 1, 1384/2005 Spring & Summer

IRANIAN JOURNAL of
CRYSTALLOGRAPHY
and MINERALOGY

Mineralogical investigation of hydrothermal alterations in the middle part of Taron Mountains – Northwest of Iran

A. R. Ganji

Department of Geology, Islamic AZAD University Lahijan Branch

E-mail: ar_ganji2000@yahoo.com

(Received: 23/6/2004, received in revised form: 14/3/2005)

Abstract: The studied area is a part of Taron Mountains and is located in 40 km north of Zanjan. The area is formed mainly by Tertiary volcano-sedimentary and plutonic rocks, which are mostly altered. Based upon geological setting, the hydrothermal alterations in the area are divided into two groups: (1) Regional alterations consisting of potassic, sericitic and propylitic types. (2) Structurally controlled alterations consisting of three argillic & alunitic types. The mineralogical studies show that, the major minerals characterizing the argillic – alunitic alterations are APS minerals (especially alunite and jarosite) + clay minerals (kaolinite, montmorillonite, illite, mixed-layer illite/smectite) + chlorite + sericite + quartz + gypsum + pyrite, that their quantity, grain size and crystallinity vary in the different alteration types. In order to determine the temperature of argillization, the illite crystallinity factor is used and the results of calculations showed that the formation temperature of illites is about 200 to 240 °C. The results of this study indicate that the argillic-alunitic alterations of studied area considerably resemble high-sulfidation type of the epithermal argillic alterations in the continental arc subduction zones.

Keywords: *Hydrothermal alteration, APS minerals, Illite crystallinity (IC), Taron Mountains.*