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Geochronology investigation of the Bahlul Daghi volcanic dome, north of Tabriz, by application of $^{40}Ar/^{39}Ar$ dating on biotite

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Abstract: Tabriz Basin has had extensive Cenozoic and Quaternary volcanic activity and lies in NW Iran within the collision zone of the Arabian and Eurasian plates. Formations in the region consist of siliciclastic rocks of the Miocene age (Upper red formation), along with younger dacite volcanic rocks. The Bahlul Daghi volcanic dome in the south of Spiran is variable in terms of the composition between dacite to rhyolite. It usually contains porphyry texture with phenocrysts of quartz, plagioclase, sanidine, hornblende and biotite. Field observations clearly show that they penetrate into the sequence of the Upper Red Formation, so they are younger than these units. In order to determine the exact age of volcanic rocks, Ar-Ar age dating was performed on seven biotite crystals isolated from the dacite sample. This analysis yielded saddle-shaped age spectra with initially old apparent ages followed by decreasing to a well defined plateau age, from which a precise age for volcanic rocks can be determined. Our new $^{40}Ar/^{39}Ar$ isochron results date this volcanic rocks 2.05±0.15 Ma.

Keywords: *dating; excess argon; plateau; Spiran; Bahlul Daghi; Tabriz.*

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