PETROGRAPHY, GEOCHEMISTRY AND STABLE CARBON AND OXYGEN ISOTOPES OF TRAVERTINE FROM THE QOTUR AREA, NW IRAN

Fatemeh Asheghi[a], Mohssen Moazzen[a], Robab Hajialioghli[a], Vartan Simmonds[b]

[a]Department of Earth Sciences, University of Tabriz, Tabriz, Iran

[b]Research Institute for Fundamental Sciences (RIFS) Uinversity of Tabriz, Tabriz, Iran

(moazzen@tabrizu.ac.ir)

ABSTRACT

The study area is located at West of Khoy, at the Turkey border in NW Iran. Travertine morphology types in the Qotur area include cascade, fissure-ridge, mound, dam and stream crust with oncoids. Four common types of lithofacies were identified according to morphology in the field and petrographic features. These are i) crystalline layers, ii) oncoids, iii) black carbonate and iv) tufa. Mineralogy of the Qotur travertine observed under the microscopic is fine-grained and crystallized calcite and aragonite. Accessory minerals are hematite and clay minerals. Foraminifer fossils in the limestone associated with the travertine are lipidocyclina with Eocene-Oligocene age. Chemical analyses from travertine samples show that Fe content is 17664 ppm and Sr content is 2900 ppm. Carbon and oxygen isotopes values are +23.50 to +24.43‰ and. is +8.09‰ to +11.83‰. The chemical and isotopic features show that Qotur travertines are thermogenic, formed by high degree of precipitation in a fast degassing condition. They are formed by the igneous -relative hydrothermal activities in NW Iran.

Keywords*: Travertine, thermogenic, stable isotopes, NW Iran.*