Zeolite Origin within the Pliocene Sedimentary-Pyroclastic Deposits in the Southwestern Part of Syria

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Abstract : Geological surveys in the southwestern part of Syria showed the presence of sedimentary-pyroclastic deposits, volcanic tuff, to the age of the Upper Pliocene and contain the following minerals according petrographical study and XRD, SEM, XRF analysis and surface properties. X-Ray diffraction results indicate the presence of analcime, phillipsite and chabazite in in all the studied localities. There are also amorphous materials and clay minerals such as illite and montmorillonite. The non-zeolite constituents include olivine, clinopyroxene orthopyroxene and spinel, and less of magnetite and feldspar. Some major oxides were determined through XRF geochemical analyses which include SiO_2, Al_2O_3, K_2O, Fe_2O_3, and CaO for volcanic tuff and zeolite. The formation of these depositions can be summarized in the following stages during the Pliocene: Volcanic activity at the edges of Al Rutba uplift and Jabal Al Arab depression was a rich by tuff bearing ultra basic and basic xenoliths plus second phase by scoria, during the early Pliocene. Volcanic calm with the activity of erosion and form lakes in which deposition of a set of wastes, including olivine resulting from the disintegration of xenoliths during the middle Pliocene. Zeolites minerals form later, which make up about 15-20% and increase and decrease in reverse relation with the olivine sand. Zeolite is formed from volcanic glass, and the results of SEM show that the zeolites minerals very well crystallized.

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