

Diagenetic transformation of diatomite from Azraq basin

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The Pleistocene diatomaceous earth deposits (4.5 - 31m thick) of the Azraq basin of Jordan underlie claystone beds. The depth from the surface ranges between 11m and 42.5m. Most of the boreholes indicate, the presence of upper major diatomaceous horizon. The deposition of diatomite is believed to be controlled by the structural setting of the depression [1]. Two types of diatomaceous frustules were recognized; the pennate (0.0125mm) and the centric (0.0825mm). The pennate type is connected in a pattern indicating a colony growth. Many of the frustules are fragmented with different grades. The fragmentation is the result of surface intraformational reworking. Other frustules are partially or completely dissolved. The X-ray diffraction analysis indicated that the frustules are amorphous (opal- A), with a poorly developed cristoblite phase that appears at 4.04 Å. The non – clay and clay minerals which are associated with the diatomaceous earth are smectite, palygorskite, kaolinite, illite, dolomite, quartz and halite. Palygorskite and smectite neof ormation were the result of diagenetic diatomite dissolution. The released silica from the dissolved frustules was consumed by diagenetic growth of smectite, palygorskite, and microcrystalline idiomorphic quartz.

[1] Khoury, H., and Qa'adan, M. (2003), the University of Jordan. 112pp.