

Geochemical and Mineralogical Characters of the Coastal Plain Sediments of the Arabian Gulf, Kuwait

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Abstract : The present study deals with detailed geochemical and mineralogical studies of the coastal plain sediments formed along the shoreline of the Arabian Gulf area, Kuwait. These deposits are mainly fluviomarine and beach sands. The coastal plain deposits of the central Kuwait shoreline zone were found to consist of average medium-grained sand. The sand composed, on average of about 90% sand, and about 10% or less is mud, and has a unimodal distribution with a mode of medium sand (1-2 ϕ). The sediments consist mainly quartz, Feldspar, clay minerals with carbonate minerals (detritus calcite and dolomite) and rock fragments (chert). The mineralogy of the clay fractions of the sediments is dominated by illite, palygorskite, mixed layer illite-montmorillonite with minor amounts of chlorite and Kaolinite. Heavy minerals are concentrated in the very fine sand fraction and are dominated by opaque minerals, and non opaque minerals which represented by amphiboles, pyroxenes, epidotes, dolomite, zircon, tourmaline, rutile, garnet and other which represented by Staurolite, Kyanite, Andalusite and Sillimenite as a trace amounts. The chemical analysis for the detrital amphibole grains from sandstone of coastal plain sediments shows the following features; the grains which have (Na+K) <0.50 its composition ranges from actino hornblende to magnesio hornblende, but the grains which have (Na+K) >0.50 its composition have wide variation and on the (Na+K)-AlIV diagram can be characterized two association: Association 1 which characterized by low amount of AlIV and low amount of (Na+K), by comparing the chemical composition of this association and the chemical composition of amphibole grains from older basement rock, can be say, these association may be derived from metamorphic source rocks and association 2 which characterized by high amount of AlIV and low amount of (Na+K), may be derived from volcanic source rocks.

Keywords : chemical composition, clay minerals, coastal area, electro probe micro analyzer (EPMA), fluviomarine sediments, heavy minerals

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