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Mechanical and petrographical properties of the lower Tertiary limestones of Jabal Hafit, United Arab Emirates

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The lower Tertiary limestones of United Arab Emirates of Eocene to Lower Oligocene rocks are exposed on the limbs of the Jabal Hafit anticline. The Rus, Dammam and Asmari formations of this interval cover most of the foundational bedrock of Al Ain city, located in the southeastern part of the Abu Dhabi Emirate. The mechanical and the diagenesis processes of these limestones showed that the diagenetic processes include dissolution, dolomitization, compaction and cementation that partially control the mechanical behavior of the rocks. Three types of limestones recognized as chalky limestone (wackestone facies) are soft limestone consisting of the planktonic foraminifera such as (*Cribrohantkenina inflata* and *Hantkenina longispina*), deposited in deeper water environment. It was characterized by hard texture with dusty feel, with high porosity and relatively low dry density and can hold large amounts of water. The accumulations of large foraminifera of shoal energetic environment such as *Asterocyclina pentagonalis, Discocyclina* sp. and *Nummulites* sp. in dolomitic limestone (packstone/grainstone facies) as intermediate give variable sizes of pores which reach up to a few cm in diameter were observed and provide strong possibility for high permeability conditions. The third type is hard limestone with chert nodules and bands (mudstone/wackestone facies) that were deposited in a relatively deeper environment.

Biography

Osman Abdelghany completed his BSc in Geology with honors and MSc in Stratigraphy and Micropaleontology from Ain Shams University, Cairo, Egypt respectively. He obtained his PhD in 1996 from Vienna University, Austria. He is currently working as an Associate Professor of Stratigraphy and Micropaleontology at United Arab Emirates University, UAE. He is a member of many societies and the affiliations include the ESG, GSA, GSE, ESP and ENHG. He is particularly interested in Cretaceous/Tertiary stratigraphy and microfossils and published many papers in national and international magazines.

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