



## **The replacement of aragonite by authigenic carbonates (in the mud diapiric ridges, the Gulf of Cadiz)**

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The mud diapiric ridges covered by carbonate chimneys and crusts were investigated during the Training-Through-Research cruises (2003-2006) in the Gulf of Cadiz at the depth from 300 to 1500 m. Chimneys from all of these fields show similar petrographic characteristics, being mainly formed by authigenic carbonates with distinctive contents of Fe-Mg (ankerite, dolomite and Mg-calcite). Authigenic carbonates occur as micrites and coatings around detrital grains and framboidal agglomerates of iron oxides. Studying by example of aragonite replacement in corals shows different stages: initial aragonite coral is replaced by calcite and dolomite forming mineralogical assemblage consists of aragonite (70%), calcite (15%), Mg-calcite (10%), dolomite (5%). Then it changes into ankerite (80%) and Mg-calcite (20%) (stage III) and finally - into ankerite with small admixture of calcite. According XRD analysis and description of thin-section goethite (FeOOH) is appearance from the second stage. At the last stage this mineral covered all septal walls of corals and rich 30% from common bulk. The formation of the dolomite/iron oxide agglomerates could be related to bacterial fermentation in the cold seeps and to changing of water condition with increasing of  $Mg^{2+}$  and  $Fe^{3+}$  ions. According to determination of age, the ankerite/goethite corals were formed during the low sea-level due to Mg/Fe precipitation from Mediterranean Outflow Water through the Gibraltar Strait.