



Silica-dolomite microbial mats in lacustrine systems from Tertiary basins of Central Spain.

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A significant part of the Miocene record from Tertiary Basins in Central Spain is composed of dolomite beds interstratified with chert, gypsum, marl and mudstone beds. The general sedimentary context for dolomite-bearing formations is well established in mudflat- (saline) lake complexes developed in closed basins. Traditionally, early diagenetic dolomitization processes of carbonate precursors have been invoked to explain dolomite formation in those environments. However, the geochemical, mineralogical, textural and sedimentological results of our studies carried out in Miocene dolomite series from the Madrid and Duero basins in central Spain, point out that dolomite was formed as a primary product linked to microbial activity in microbial mats and biofilms (Sanz-Montero et al., 2005). Microbial dolomite frequently occur associated with chert, mainly characterized as opal CT. Chert form distinctive cm-thick beds showing pustular and planar morphologies typical of stromatolites. The beds are thinly laminated, and occasionally disrupted by bioturbation. Petrographical examinations of chert have revealed the presence of C-rich microstructures of possible biological origin such as biofilms, filaments, and distinctive clusters of microbial cells. This suggests some involvement of microbial communities in the silica precipitation. If microbial participation was active or passive acting as templates for silica nucleation remains to be precised. The occurrence of dolomite and silica in the same microbial context, although not fully explained yet, expand the range of biochemical processes conducive to the mineral formation in lacustrine conditions.

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Sanz-Montero, M.E., Rodríguez-Aranda, J.P. and Calvo, J.P. (2005). Biomineralization in relation with endoevaporitic microbial communities. Miocene lake deposits of the Madrid Basin, Central Spain. *Geophysical Research Abstracts*, v. 7, 06837.