

## Role of clay minerals on the carbonate chemistry in a marine clay formation

Catherine Lerouge, Sylvain Grangeon, Martin Mazurek, Guillaume Wille

► **To cite this version:**

Catherine Lerouge, Sylvain Grangeon, Martin Mazurek, Guillaume Wille. Role of clay minerals on the carbonate chemistry in a marine clay formation. 7th Mid-European Clay Conference 2014, Jun 2014, Dresden, Germany. hal-01004419

**HAL Id: hal-01004419**

**<https://hal-brgm.archives-ouvertes.fr/hal-01004419>**

Submitted on 11 Jun 2014

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

# Role of clay minerals on the carbonate chemistry in a marine clay formation

Lerouge C., Grangeon S., Mazurek M., Wille G.

Samples from different levels of the Opalinus clay formation at Benken were studied for their mineralogy using X-ray diffraction, and for chemistry of diagenetic calcite, using X-Ray diffraction and electron microprobe (EPMA). X-ray diffraction data combined with EPMA mean chemical composition of calcite indicate that the calcite *c* lattice parameter decreases with the decreasing Ca occupancy in its cationic site, and consequently with incorporation of trace elements in calcite, the major ones being Fe and Mg. At the scale of the formation, the trace element content in calcite is anticorrelated with clay content in the claystone.

The different generations of diagenetic calcite identified in a sample (micrite in clay matrix, and sparite in silty layers or lenses) exhibit almost the same trace element content, but are characterized by different Fe/(Fe+Mg) atomic ratios : <0.45 for micrite and ~0.7 for sparite. These data suggest that clay minerals have a constant control on the cation content of porewater from which calcite precipitated, but cation ratios are respected independently of cation sorption on clay minerals.

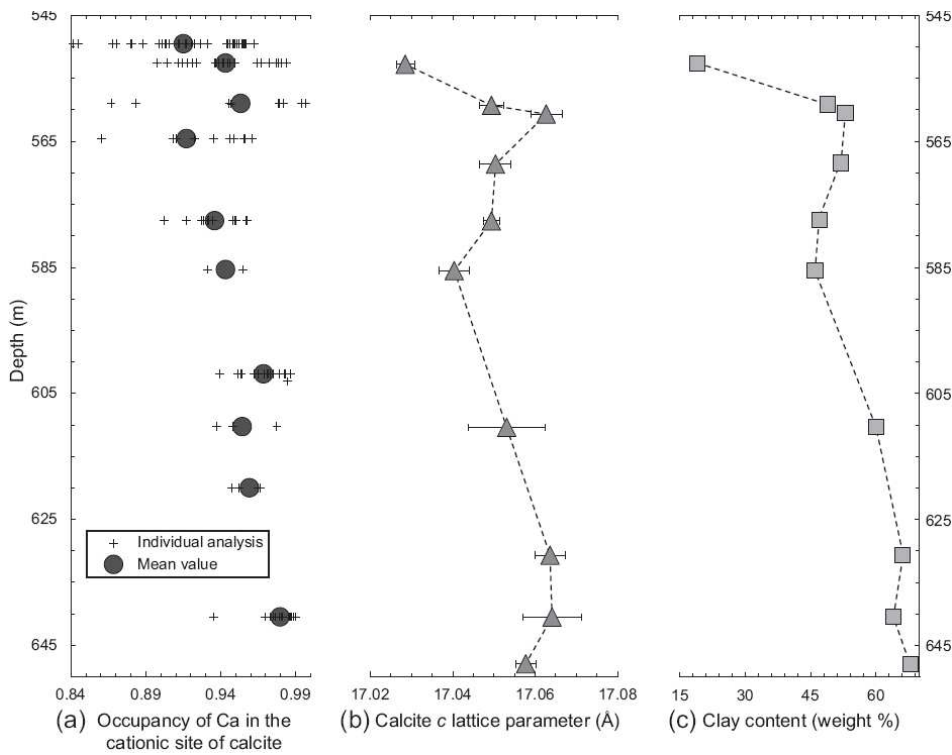


Figure 1.