

06.11 Smectite to Illite Transformation of Gulf of Mexico – Eugene Island (GoM-EI) Mudrock

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ABSTRACT

GoM-EI material was cooked at 200C, 250C and 300C. The X-ray diffraction analysis of cooked sample show that the discrete smectite and discrete illite decrease with heating, replaced by illite/smectite (I/S) mixed layer phase. In the I/S phase, smectite decreases from 36% to 10%, while illite increases from 64% to 90%.

The GOM_EI clay were cooked in the hydrothermal reactor (Fig. 2) under high temperature and high pressure with potassium chloride solution. This research gives important information about the contributing factors on transformation rate. It also sets the foundation of further study on changes in compression behavior of mudrock caused by illite/smectite transformation.

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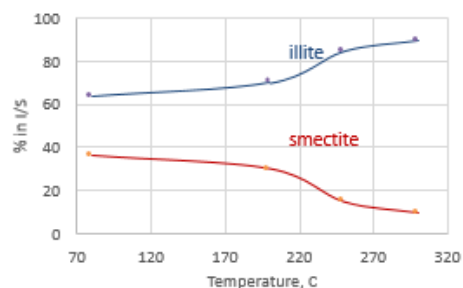


Fig. 1: Weight percentage of smectite and illite in I/S phase changes with temperature. Smectite in I/S follows a decreasing trend, whereas illite in I/S increases.

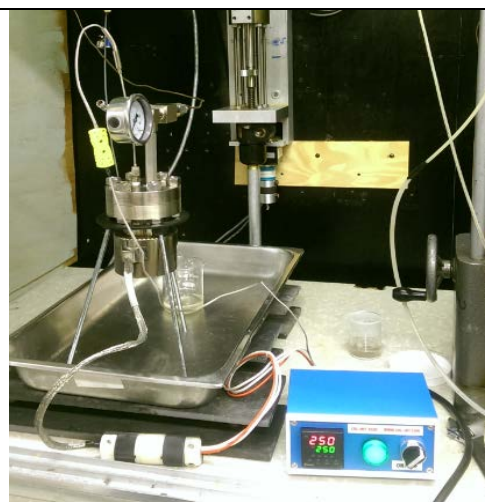


Fig. 2: Hydrothermal reactor with heating system, maximum cell pressure up to 30MPa.

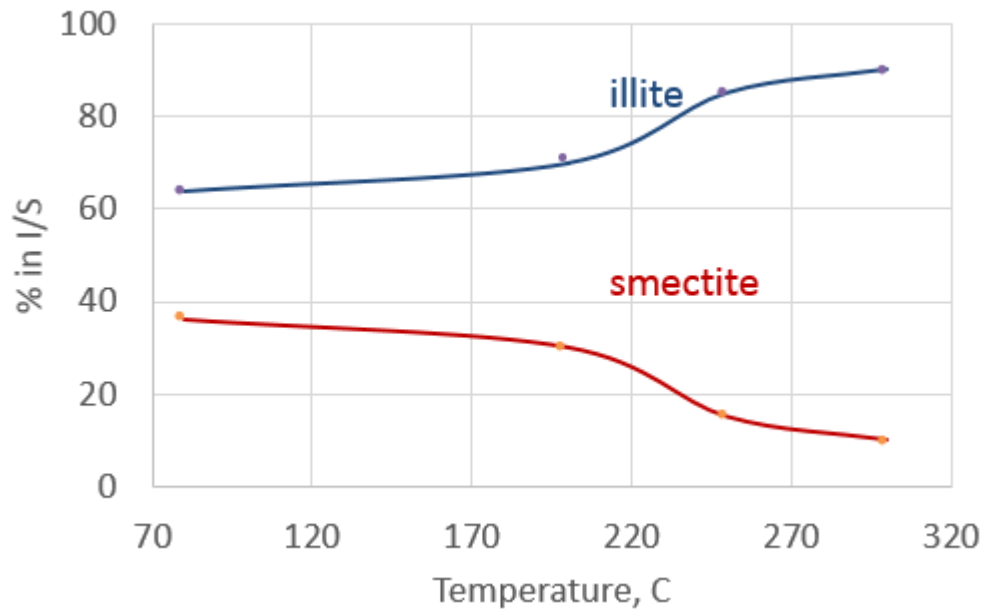


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