
Comparison of I/S Transformation and Maturity of Organic Matter at Elevated Temperatures

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Abstract: Comparing the state of reaction advancement of I/S (illite content of illite/smectite mixed layer minerals) and organic matter (vitrinite reflectance) in instances of high temperature gradients allows one to observe the evolution of geologic materials under extreme conditions. In a geothermally heated sedimentary series (Salton Sea area, California), both clays and organics have reacted to completion in the temperature gradient range of 200° – 400° C/km during heating episodes of 10⁴ years. We observed an instance of rapid heating, through magmatic intrusion into the Meso-Paleozoic eastern Paris Basin sedimentary series in late Permian time, which induced changes in the organic material, but where clays are apparently unaffected.

Key Words: Illite/smectite • Kinetics • Vitrinite maturity

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