



Minerals

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## Clay Minerals

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Clay minerals are fundamental components of sedimentary basins and play a complex, dual role in the petroleum industry. While they are essential constituents of source and reservoir rocks, their unique physicochemical properties often pose significant engineering challenges during drilling, completion, and production.

This Special Issue features comprehensive reviews on nanofibrous clays and mechanical inhibitors, alongside original research on novel shale stabilizers and high-temperature drilling fluid composites. Several studies delve into the mechanisms of wellbore instability and reservoir damage, with case studies focusing on the Zhengning oilfield and the Gulong shale oil reservoir in China. Furthermore, the collection addresses critical petrophysical interpretation challenges in high-resistivity shales and glauconite-rich greensand reservoirs, and evaluates the performance of palygorskite as a sustainable extender in cementing operations.

By bridging mineralogy with petroleum engineering, this Special Issue provides valuable insights for researchers and industry professionals seeking to optimize drilling performance and improve reservoir management in clay-rich formations. The findings contribute to a deeper understanding of how to leverage the beneficial properties of clay minerals while mitigating their problematic impacts in the global energy exploration landscape.

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