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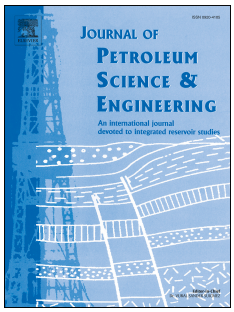

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Nanoscale geomechanical properties of Western Australian coal

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Abstract

Geomechanical properties are of great importance in coal mining exploration, (enhanced) coal bed methane production and carbon geosequestration in deep unmineable coal seams. However, coal highly heterogeneous rocks, and conventional experimental methods (e.g. acoustic, seismic or unconfined compressive strength tests) only measure the cm-m scale bulk properties. Thus, we measured the geomechanical properties at nanoscale of Western Australian Collie coal. We mapped the nanoscale mechanical heterogeneity and correlated it with the sample's morphology (measured