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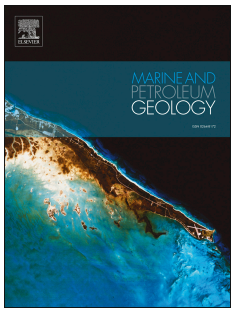


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# Shear heat model for gouge free dip-slip listric normal faults

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## Abstract

Shear heating due to brittle faulting is important in petroleum geosciences, tectonics and seismic studies. Temporal variation of shear heat in a listric normal fault, with a circular arc-shaped fault plane is simulated in this work, which was not done so far. The work is expected to have a far reaching implication in tectonics and petroleum geosciences since listric faults can be closely associated with hydrocarbon reserves (e.g., Valdiya and Sanwal 2017). For such a fault plane devoid of gouge and any secondary faulting, shear heat is proportional to the mass of the hanging-wall block, the coefficient of friction acting between the hanging-wall and the footwall block, and radius of the circular arc. Shear heating intensifies temporally as the hanging wall block slides down and reaches progressively gentler fault dip.

**Keywords: (1)** Shear heat, **(2)** frictional heat, **(3)** listric fault, **(4)** brittle shear, **(5)** structural geology