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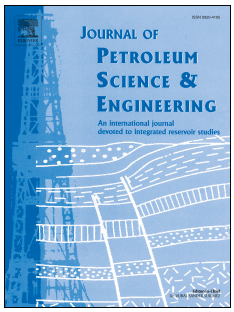

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Mukarram Beg, Shivanjali Sharma, Umaprasana Ojha

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Effect of Cationic Copolyelectrolyte Additives on Drilling Fluids for Shales

Mukarram Beg[a], Shivanjali Sharma[a*], Umaprasana Ojha[b*]

[a]*Department of Petroleum Engineering,* [b]*Department of Chemistry, Rajiv Gandhi Institute of Petroleum Technology, Jais, Amethi - 229304, Uttar Pradesh, India*

Corresponding Author Footnote

S. Sharma: Department of Petroleum Engineering, Rajiv Gandhi Institute of Petroleum Technology, E mail: ssharma@rgipt.ac.in, Phone: +917081921764, Fax

U. OJha: Department of Chemistry, Rajiv Gandhi Institute of Petroleum Technology E mail: uojha@rgipt.ac.in, Phone: 09451959597, Fax

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ABSTRACT

Wellbore instability remains one of the major challenges in terms of both time and economy during drilling. The issue is more pronounced in reactive shale formations. A set of polytertiary amines (PTA)-*ran*-polyquaternary amines (PQA) polymers possessing different ratios of tertiary amine to quaternary amine (0:100, 40:60, 60:40, mol:mol) segments were synthesized and their efficacy towards the wellbore stability of shale reservoirs were ascertained. When added in similar weight proportions, the copolymer possessing 60:40 (mol:mol) ratio of tertiary to quaternary amine moieties (PTA-*ran*-PQA-64) enhanced the apparent (≥58%) and plastic (≥71%) viscosities of silicate drilling fluid to maximum extent. The amount of API filtrate