Abstract Template

Title: A Novel Approach for Formulating CO_2 Foam based Fracturing Fluid by Synthesized Grafting Copolymerization to enhance its stability for HPHT Shale Reservoirs.

Authors-: Sahil Chaudhary[1], Sandeep Singh[2], Vikas Kumar singh[3],

[1]Department of Petroleum and energy Studies, DIT University

[2]Department of Petroleum and energy Studies, DIT University

[3]Department of Petroleum and energy Studies, DIT University

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Abstract

Conventional Sources of energy are depleting at an alarming rate which give us unconventional resources as an only option for energy source. Unconventional sources of energy like Shale gas, Tight gas, Coal bed methane are difficult to exploit as compared to the conventional sources of energy. Hydraulic Fracturing is the well stimulation technique used for exploitation and production of these unconventional resources. Foam fracturing is the the most opted stimulation technique for low permeability shallow wells because of its reduced damage potential to reactive and sensitive formations. This research paper discusses about the evaluation of attempt made to develop an eco-friendly CO_2 foam based fracturing fluid which can be used at HPHT conditions for shale reservoirs by Grafting Copolymerization. The graft copolymer was developed by free radical polymerization of Gum Acacia (GA) and Lactic acid (LA) by using Potassium Persulphate (KPS) as an initiator and its characterization was done by FESEM and FTIR analysis. Then, the grafted copolymer (GA-g-LA) was processed with CO_2 foam based fracturing fluid as an additive. Lecithin is used to emulsify brine and liquid CO_2. The effect of graft copolymer was on rheology and stability of the formulated foam based fracturing fluid is evaluated as a function of surfactant concentration. The results are compared with the conventional foam based fracturing fluids. The results showed that grafted copolymer has increased the stability of the formulated fracturing fluid at high temperatures. Use of grafted copolymer results in higher viscosity and proppant carrying capacity which is beneficial for HPHT fracturing conditions.The results of the core flood studies was evaluated on a shale sample to determine its return permeabilty and it was comparable to non-foam based fracturing fluid.

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I. Biography:

Sahil Chaudhary is a pre-final year petroleum engineering student at DIT University. He has done internaships in Oil and Natural Gas Corporation India in various oil and gas domains. He has published research papers as well.

II. Presenting author details



Full Name: Sahil Chaudhary
Contact number: 9758879642

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