

Experimental Investigation of the Kinetics Properties of the Nano Petroleum During a Vertical Line

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Abstract

In this study, experiments are designed to research the consequences of ultrasonic flowers of zinc nanoparticles on the properties of petroleum flow. The rheological and thermal properties of the petroleum containing nanoparticles were investigated in vitro. The nanoparticles were prepared by ultrasonic method in petroleum. Experiments were administered during a hot tube for plain oil and nanoparticles containing flowers of zinc. The effect of temperature changes, addition of nanoparticles and tube length on the values of friction coefficient, velocity, conductivity coefficient, overall heat transfer coefficient, thermal diffusion coefficient and kinematic viscosity were investigated. For nano oil (containing 1wt.% Zinc oxide) Reynolds number decreased to 0.99 initial value, Prandtl number decreased to 0.951 initial value, Peclet number increased to 0.94 initial value.

Keywords: Rheology petroleum • Heat properties • Ultra-Sonic • Nano particles

Introduction

Nanotechnology has been ready to dramatically revolutionize the varied sciences by working across the range of atoms and therefore the ability to switch their arrangement and optimize the efficiency and efficiency of systems with less raw materials and better quality production. Additionally nanotechnology, with its interdisciplinary nature, has broken the boundaries of various sciences and created a context during which the results, capabilities and tools of all disciplines and sciences are often wont to enhance the standard of life. The oil and gas industry in Iran is extremely old and has been ready to exploit these huge resources to make a special place during this regard for the country. Trying to access technology and improve the established order in these industries are some things that has been paying particular attention thereto for years. For this reason, the oil, gas and petrochemical industries are relatively faraway from the nanotechnology sphere, and to some extent nanotechnology has entered the world. What this study is watching are areas of nanotechnology within the industry.

Crude oil, on the opposite hand, may be a hydrocarbon liquid that accumulates

in various porous rocks within the crust and is either burnt as fuel or converted to chemicals by processes. Although it's often referred to as black gold, it's a good range of viscosity thanks to its different hydrocarbons and various colors of dark, black and yellow. This fuel is made under conditions of high and warmth on the buried bodies of zooplankton and algae. Nowadays, a replacement generation of fluids has been the main target of researchers within the oil and gas industry, called nanofluids or smart fluids, resulting from the addition of low volumes of nanoparticles to fluids to reinforce and improve their properties. One among the foremost important properties of nanofluids is that their properties strongly depend upon the dimensions of the nanoparticles present. Like smart fluids can improve the method of overloading the tanks by changing the wettability, reducing the lastingness and also the sand strength. For instance, Salimeno and his colleagues were ready to show that the utilization of nanoparticles increases the rheological properties also because the effect of surfactant solution on the oil extraction process and, within the first place, causes a change within the physical phenomenon coefficient of the oil-surfactant mixture. On the opposite hand, nano particles can play a big role within the enhanced oil recovery.

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