

## عنوان مقاله:

An Investigation of Wettability Alteration of Solid Particles in Emulsion from Intermolecular Forces Point of View

## محل انتشار:

سومین کنفرانس بین المللی فناوری های جدید در صنایع نفت، گاز و پتروشیمی (سال: 1400)

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## خلاصه مقاله:

Emulsions are widely utilized in cosmetics, nutritional industries, drilling muds and pharmaceutical consumptions. Emulsions are thermodynamically unstable and surfactants or surface-active polymers are usually used in order to contribute to form a kinetically stable system. However, surfactant stabilized emulsions demonstrate short periods of longevity and may be chemically hazardous in some certain cases. In this research, particles have been used instead of surfactants, which assemble by the oil-water interface as a densely packed layer form. Then, this layer greatly protects against the flocculation of the droplet and also coalescence by means of electrostatic and steric rather than by remarkably reducing the value of oil-water interfacial tension in which the surfactant agent does. Dual wettability of solid particles is critical factor in order to enhance stability of emulsion, which can be achieved using either low concentration of surfactant or chemical modification of the particle surface. According to the results, it can be concluded that the highest level of emulsions stability will be achieved when the electrostatic intermolecular forces between nano particles and charged surfactants or hydrogen bonding between nonionic surfactant and nano particles is at the optimum concentration of surfactant. This concept is depicted using zeta potential and particles contact angle

## کلمات کلیدی:

Emulsions, Surfactant, Polymers, Intermolecular Forces, Wettability

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