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STABILIZATION OF HIGHLY CONCENTRATED EMULSIONS WITH OVERSATURATED DISPERSED PHASE: EFFECT OF SURFACTANT/PARTICLE RATIO

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Highlights

- Highly concentrated water-in-oil emulsion with an oversaturated dispersed phase
- Emulsion inclined to crystallization of an internal phase
- Mixture of fumed nanosilica with surfactant is used as stabilizer
- Transitional point separating particles and surfactant domination regions
- Most stable emulsion to crystallization associated with the transitional point

Abstract

Currently, there is considerable interest in highly concentrated emulsions (HCE) due to both the variety of rheological effects that are observed in their deformation and flow and to their practical application in the mining, pharmaceutical, cosmetics and food industries. The material investigated is highly concentrated water-in-oil emulsion with a dispersed phase volume fraction of approximately 90%. The dispersed phase is a super-cooled solution of inorganic salts. Instability of such emulsions arises either from crystallization of the dispersed phase in the

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