

## Accepted Manuscript

Title: Sedimentation and Stabilization of Nano-fluids with Dispersant

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PII: S0927-7757(18)30524-7  
DOI: <https://doi.org/10.1016/j.colsurfa.2018.06.030>  
Reference: COLSUA 22599

To appear in: *Colloids and Surfaces A: Physicochem. Eng. Aspects*

Received date: 2-4-2018  
Revised date: 11-6-2018  
Accepted date: 12-6-2018

Please cite this article as: Abdullah M, Malik SR, Iqbal MH, Sajid MM, Shad NA, Hussain SZ, Razzaq W, Javed Y, Sedimentation and Stabilization of Nano-fluids with Dispersant, *Colloids and Surfaces A: Physicochemical and Engineering Aspects* (2018), <https://doi.org/10.1016/j.colsurfa.2018.06.030>

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# Sedimentation and Stabilization of Nano-fluids with Dispersant

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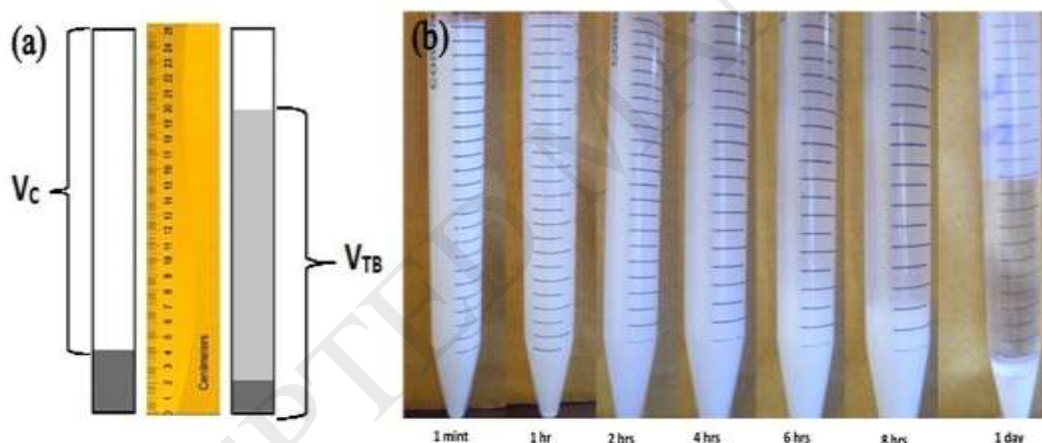
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## Graphical abstract



## Abstract:

Stability of nanofluids is one of the major parameters which measures its effectiveness. The agglomeration of nanoparticles reduces the stability of nanofluids and consequently affects their technologically relevant properties. In this study, stability of alumina nanoparticles (size ~ 50 nm) in ethanol-water mixture with and without dispersant has been investigated. Sodium salt of poly methacrylic acid (SPMAA) as a dispersant were used in this investigation. Clear solution height with respect to time, sedimentary photographs and zeta potential techniques have been used to analyze the stability behavior of nano-fluid. The effect of binary mixture proportions and dispersion's pH has been investigated and discussed. The results showed that sedimentation, zeta potential and photographic techniques have a great correspondence with each other. SPMAA has been used as the dispersant in low concentration (0.03ml) and has a negative impact on the stability of nano-fluids. The isoelectric point of alumina found to be at pH 7 but with dispersant shifted toward acidic region (pH 4.5). Higher binary mixture concentrations (10% and 90%) by weight exhibited good stability.

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