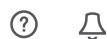




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Volume 463, Issue 1, 6 April 2020, Article number 12080
International Conference on Sustainable Energy and Green Technology 2019, SEGTE 2019;
Millenium Hilton BangkokBangkok; Thailand; 11 December 2019 through 14 December 2019;
Code 159042

A systematic study of rheological properties of waterironoxide nanofluids with graphene nanoflakes (Conference Paper) (Open Access)

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Abstract

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Magnetic properties are the concentrated studies in iron oxide based magnetic nanofluid area; however very limited number studies have been conducted on the psychical properties of this nanofluid. The main objective of this study is to investigate the viscosity properties of Maghemite: MH (iron oxide) nanoparticles dispersed de-ionized water (DW) nanofluids (DW-MH) for the addition of graphene (Gr) nanoflakes. DW-MH nanofluids were prepared by two steps technique and graphene was added with the aid of sonication and stirring process. Viscosity were measured for every samples varied for the loading of graphene in DW-MH nanofluids. Every measurement was conducted in rising temperature varied within 20 - 60 °C. Effect of both of loading of graphene and rising temperature on the viscosity properties of the fluid were systemically analysed. Prepared nanofluids were kept stabile about 30 days without any visible sedimentations. After the addition of graphene in the DW-MH nanofluids the viscosity of the final nanofluid samples was increased with the increasing loading of graphene nanoflakes. It was also detected that, hybrid nanofluids sample's viscosity was decreasing for the increasing temperature. This nanofluid can be the viable replacement for the heat transfer purpose in the energy harvesting and storage applications due to the good physical stability. © 2020 Institute of Physics Publishing. All rights reserved.

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ISSN: 17551307
Source Type: Conference Proceeding
Original language: English

DOI: 10.1088/1755-1315/463/1/012080
Document Type: Conference Paper
Volume Editors: Tong C.W.,Chin-Tsan W.,Huat B.S.L.,Xiang X.
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