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## **Preliminary studies on preparation of acrylate base graphene and graphene oxide (GO) nanofluid via physical blending as pour point depressants (PPD)**

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PPD emulsion product is advantageous for use in sub-ambient temperature as it improve the physical handling characteristic compared to traditional product. This superiority properties of the emulsion is largely contributed by the continuous phase of the emulsion itself. It is due to good low thermal properties of the continuous phase plus the polymer is being encapsulated within it. Nonetheless, the performance of emulsified PPD still limited since it mainly dependant on the polymer properties itself. Nanoparticles became an attention in academic and industry world as it can enhance properties of a polymer even at low loading. This provides a solution towards the lack performance of emulsified PPD by incorporating the nanoparticles particularly graphene material. Therefore, this presentation will highlight the production of PPD nanofluids through physical blending technique, mechanism involved and some progressing studies which provide a better awareness of the graphene material impact in crude oil treatment. Introduction of graphenic material reduce particles size of PPD fluids as the material adsorps onto the oil-water interfacial layer. Addition of nanoparticles showed potential in enhancing the inhibition process of paraffin wax which higher compared to normal PPD fluids. This also supported by the observation from polarized optical microscopy results, as the nano-materials displayed the more agglomeration of paraffin wax crystals which indicated a good inhibition occur as it lead to lower pour point of the paraffin wax fluids.