

The Evaluation of Fuel Desulfurization Performance of Choline-Chloride Based Deep Eutectic Solvents with Addition of Graphene Oxide as Catalyst

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Abstract : Deep Eutectic Solvent (DES) is used in various applications due to its simplicity in synthesis procedure, biodegradable, inexpensive and easily available chemical ingredients. Graphene Oxide is a popular catalyst that being used in various processes due to its stacking carbon sheets in layer which theoretically rapid up the catalytic processes. In this study, choline chloride based DESs were synthesized and ChCl-PEG(1:4) was found to be the most effective DES in performing desulfurization, which it is able to remove up to 47.4% of the sulfur content in the model oil in just 10 minutes, and up to 95% of sulfur content after repeat the process for six times. ChCl-PEG(1:4) able to perform up to 32.7% desulfurization on real diesel after 6 multiple stages. Thus, future research works should focus on removing the impurities on real diesel before utilising DESs in petroleum field.

Keywords : choline chloride, deep eutectic solvent, fuel desulfurization, graphene oxide

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