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### Desulfurization of fuels using Green Solvents

I.M. AlNashef

Khalifa University, United Arab Emirates

The combustion of fuel causes pollution to the environment due to the sulfur in fuel oils, which forms different sulfur oxides (SO<sub>x</sub>) during combustion. To minimize the emission of these gaseous pollutants, increasingly strict regulations are being imposed on oil refineries to reduce the sulfur content to a very low limit, around 10-30 ppm. Traditional hydrodesulfurization process reduces the sulfur content in fuel oils; however, the complete removal of sulfur compounds is not possible due to technical and economic reasons. Nevertheless, the recent developments in environmental legalization are moving us towards a world of sulfur-free fuel oils so it becomes necessary to explore alternative desulfurization approaches. Among all different processes, extractive desulfurization appears to be specially promising and the research efforts over the last years focuses on finding the most suitable solvent for the desulfurization process. Among different possible solvents, ionic liquids (ILs) and deep eutectic solvents (DESs) have a great potential to be used in extractive desulfurization process. These solvents have favorable physiochemical characteristics, e.g. low volatility, biodegradability, high thermal stability, ability to dissolve polar and non-polar compounds, etc. In this work, the removal of different sulfuric compounds from fuel using ILs and DESs will be critically reviewed. The effect of structure of ILs, DESs, and the sulfuric compound on the extraction efficiency and selectivity will be investigated. In addition, the different processes for recycling the solvents will be discussed.

### Biography

Inas M AlNashef received his Ph.D. in Chemical Engineering from University of South Carolina, USA in 2004. After that, AlNashef joined King Saud University, Saudi Arabia. after obtaining his Ph. D. from the University of South Carolina in 2004. In 2011, AlNashef was promoted to associate professor. AlNashef was very active in research related to green engineering and sustainability. AlNashef moved to Abu Dhabi (UAE) where he is now an Associate Professor in the Department of Chemical Engineering at Khalifa University of Science and Technology. He co-authored more than 100 journal publications. He received 9 patents from US and EU Patent Offices.

enas.nashef@ku.ac.ae

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