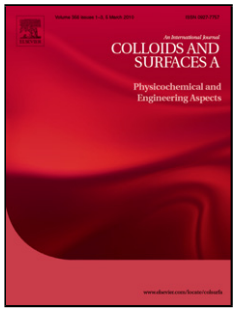

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Synthesis and characterization of quaternary ammonium based ionic liquids and its antistatic applications for diesel

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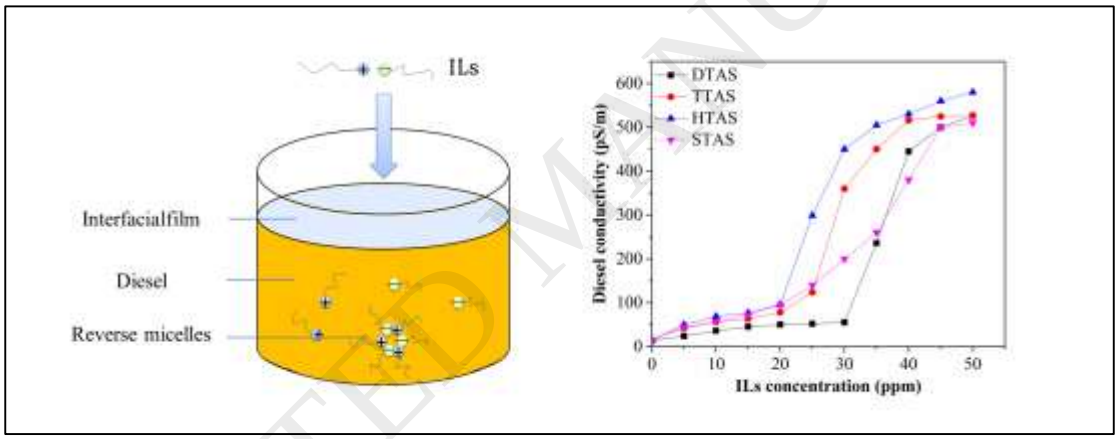
Graphical Abstract



Abstract To improve the diesel conductivity and avoid the electrostatic spark explosion/fire accidents, a series of room temperature ionic liquids (ILs) were synthetized by four kinds of long-chain alkyl quaternary ammonium salt (DTAC, TTAC, HTAC and STAC) and n-butyl naphthenate sulfonic acid using ultrasound method, which were added into the diesel as antistatic agents. Nuclear magnetic resonance spectrum (NMR), Fourier transform infrared spectrometer (FT-IR), thermogravimetric analysis (TGA) and element analysis (EA) were employed to characterize the structures and properties of the ILs, confirming the successful synthesis of the ILs. Experimental results indicated that the prepared ILs can