## عنوان مقاله:

Synthesis of Novel Imidazolium Based Ionic Liquids for Use as Multifunctional Green Additives in Gear Oils

## محل انتشار:

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## خلاصه مقاله:

In this work, the facile synthesis and identification of hexylmethylimidazolium bis(trifluoromethylsulfonyl)amide ([HMIM]TFSA) and hexylmethylimidazolium triethyltrifluorophosphate ([HMIM]FAP) ionic liquids (ILs), as multifunctional and multipurpose gear oil additives, is introduced. The tribological tests indicated that both ([HMIM]TFSA) and ([HMIM]FAP) ILs demonstrate antiwear/extreme pressure properties (AW/EP) to the gear oils by preventing wear and scar of the lubricated system at low and high temperatures. [HMIM]TFSA provided superior performance in comparison to [HMIM]FAP. Because of the presence of heteroaromatic imidazole moiety in the ILs structure, the prepared ILs also imparted anticorrosion, antioxidant, and anti-rust properties to the lubricant. All these observations confirmed that the ILs are single component multifunctional and multipurpose oil additives. In addition, due to avoiding the use of toxic and harmful elements in the preparation of ILs make the fabricated oils potential .candidates for green lubricants

## کلمات کلیدی:

Ionic liquids, Gear oil, Tribology, Multifunctional gear oil additive, Green Lubricant