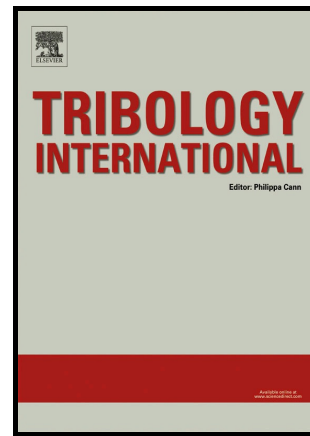


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Probing the lubricating mechanism of oil-soluble ionic liquids additives

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Abstract

To clarify the lubricating mechanism, two kinds of oil-soluble ionic liquids (ILs) with the same cation but different anions are synthesized, and then they are added into PAO10 as additives with different mass concentration. The tribological results indicate that the mixtures perform better lubricating performance than neat PAO10 for steel/steel contacts. Then quartz crystal monitor (QCM), X-ray photoelectron spectroscopy (XPS), plasma treatment, and external potential are introduced to clarify the lubricating mechanism of ILs as additives. The lubricating mechanism of the kind of ILs can be attributed to the good adsorptivity of cations and tribochemical films on the sliding surfaces.

Graphical Abstract

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