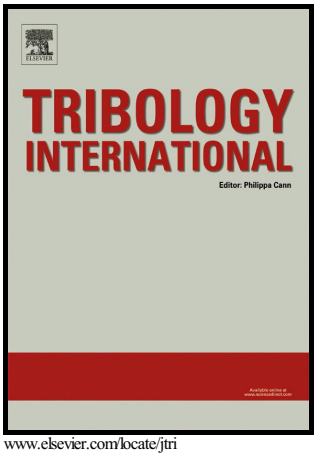

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A study of the tribological behaviour of TiO_2 nano-additive water-based lubricants

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Abstract

A ball-on-disk tribometer was employed to evaluate the lubrication performance and mechanisms of innovative TiO_2 nano-additive water-based lubricants. Two experimental methods were applied to determine the optimal mass fraction of TiO_2. In the method I, lubricants were added onto the worn disk tracks at a predetermined time interval. In the method II, the disks were immersed in the lubricants continuously during the whole process of tribological tests. The results both indicate that the water-based lubricants can significantly reduce the coefficient of friction (COF). The 0.8 wt.% TiO_2 lubricant