## Surface Roughness Effects in Pure Sliding EHL Line Contacts with Carreau-Type Shear-Thinning Lubricants

Authors : Punit Kumar, Niraj Kumar

**Abstract :** The influence of transverse surface roughness on EHL characteristics has been investigated numerically using an extensive set of full EHL line contact simulations for shear-thinning lubricants under pure sliding condition. The shear-thinning behavior of lubricant is modeled using Carreau viscosity equation along with Doolittle-Tait equation for lubricant compressibility. The surface roughness is assumed to be sinusoidal and it is present on the stationary surface. It is found that surface roughness causes sharp pressure peaks along with reduction in central and minimum film thickness. With increasing amplitude of surface roughness, the minimum film thickness decreases much more rapidly as compared to the central film thickness.

Keywords : EHL, Carreau, shear-thinning, surface roughness, amplitude, wavelength

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