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3. Laser surface texturing and applications

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Abstract

Surface texturing has emerged in the last decade as a viable option of surface engineering resulting in significant improvement in load capacity, wear resistance, friction coefficient etc. of tribological mechanical components. Various techniques can be employed for surface texturing but Laser Surface Texturing (LST) is probably the most advanced so far. LST produces a very large number of micro-dimples on the surface and each of these micro-dimples can serve either as a micro-hydrodynamic bearing in cases of full or mixed lubrication, a micro-reservoir for lubricant in cases of starved lubrication conditions, or a micro-trap for wear debris in either lubricated or dry sliding. The present article reviews the current effort being made world wide on laser surface texturing and the potential of this technology in various tribological applications.