A Comparative Study of Roughness Parameters for Different Surfaces

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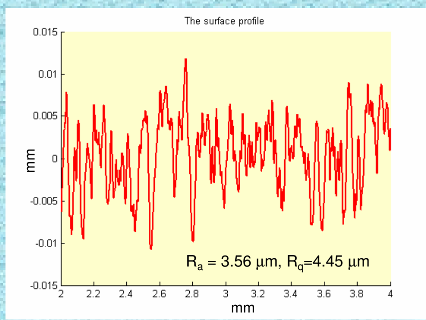
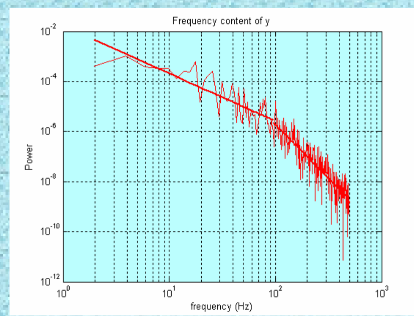
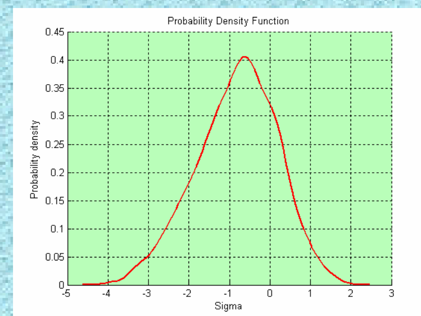
OBJECTIVE

To study the surface topography using spatial distribution parameters of five different engineering surfaces using 2D contact profilometer and 3D optical profilometer.

EDM SURFACE

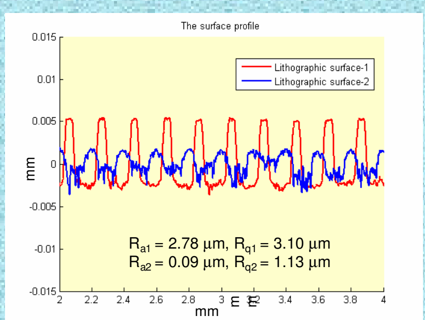


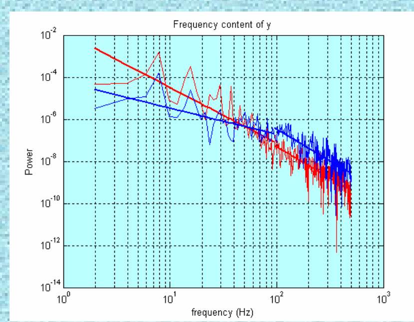


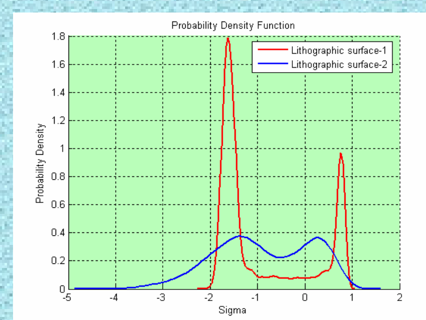


The lower frequency spectrum matches with the critical process parameters like wire diameter and the spark gap. The surface follows normal distribution.

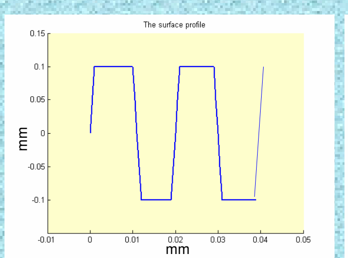
LITHOGRAPHICALLY PATTERNED STEEL SURFACE

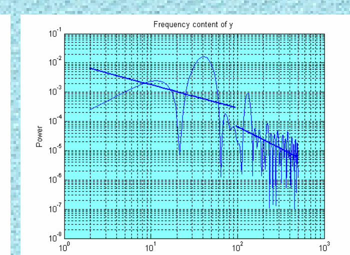




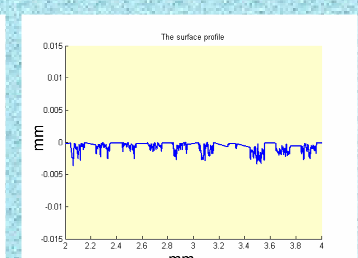


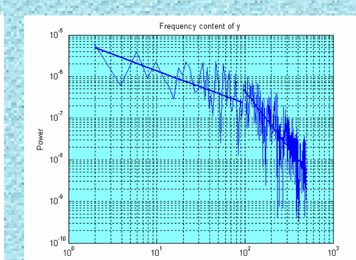
IDEAL TRAPEZOIDAL SURFACE





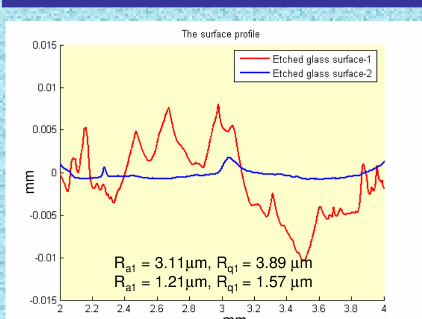
VALLEYS OF LITHOGRAPHIC SURFACE

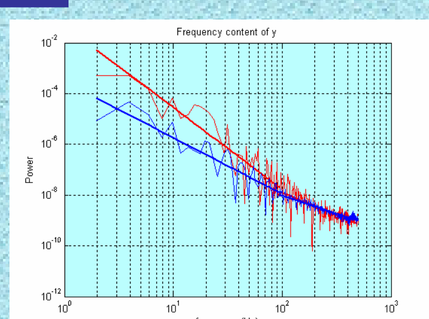


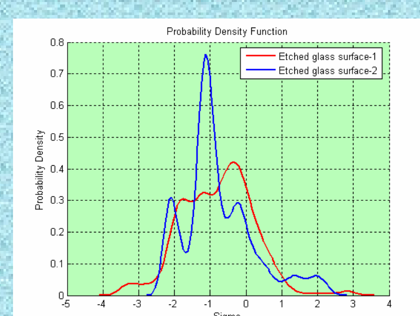


Low frequency slope in power spectrum matches with slope for that of ideal trapezoidal profile. The slope of the powers spectrum corresponding the valleys of the lithographic surface matched with the slope of the high frequency regime of etched glassed surface due to the inherent nature of the etching process. The lower frequency spectrum reveals the predominant wavelength of the patterned surface.

ETCHED GLASS SURFACE







High frequency slope in the power spectrum for different etched glass surfaces are same. Hence it is independent of process parameters. The difference in slopes at low frequency regime is due to different etching time.