

# INFLUENCE OF ATMOSPHERIC DBD PLASMA ON 3D TOPOGRAPHY OF POLYMERS

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The surface topography of six polymers (PEEK, PA66, POM C, PP, UHMW-PE HD1000 and PTFE) was elaborated from non-contact profilometry by using the coherence correlation interferometry (CCI) technique HD type (Taylor Hobson, Leicester, England). The 3D surface roughness parameters according to ISO 25178 including Sa (average roughness), Sz (maximum height), Sku (kurtosis) and Ssk (skewness) were measured. The selected polymers were subsequently polished then treated by atmospheric DBD plasma for 1 min by DCSBD plasma source under ambient air conditions. The 3D surface roughness parameters were evaluated respectively for pristine, treated surface within 24 hours and after 800 hours shift time.

PEEK, PA66 and POM C exhibited a significant reduction in the surface roughness due to DPD plasma, this may attribute to remove the high layer of the surface and melting of the surface asperities, however, the inherent polishing grooves remain visible and the surface kept good topography stability with aging. Whereas PTFE and UHMW-PE HD1000 showed a slight decreasing in the mean roughness of the surface within 24 hours from the treatment, but the roughness parameters increase with time event reached higher values than the pristine one after 800 hours. In contrast, PP exposed the opposite behaviour upon DBD plasma exposure where the roughness parameters increased after plasma treatment and this increase continues over time, where this may indicate to the constitution of nodule-link features (LMWOMs).