

Abstract Submitted
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Optical Effects on Laser Ablated Polymer Surfaces R.D. PRABHU, R. GOVINTHASAMY, N.S. MURTHY — Laser ablation of poly (ethylene terephthalate) and polyimide films were investigated using Excimer-UV laser. SEM analyses indicate the presence of rings for a wide range of ablation parameters (fluence, frequency and number of pulses). It is proposed that the particles present in the plasma plume could cause the incident laser light to diffract, similar to the optical effects observed in the femtosecond laser ablation of solids. The polymer surface provides a perfect medium to register the optical signatures as seen in the SEM images. The fringe-spacings observed in the images are compared with the theoretical diffraction patterns and the height of the plasma particles above the surface is estimated using an optimization scheme. The results of the analysis are consistent with experimentally observed dynamics of the plasma plume. It is proposed that such optical effects could be a routine feature in the laser ablation of polymers. The significance of such artifacts for lithography is discussed.

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