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Industrial Carbon-Doped SiO_2 (CDO) Film Etching in Ar/O_2/c-C_4F_8 High Density Plasmas A. ISLYAIKIN, V. KRASTEV, I. REID, G. HUGHES, A.R. ELLINGBOE, Dublin City University, Ireland — Etching of Si samples covered by a carbon-doped SiO_2 (CDO) film was performed using high-density Ar/c-C_4F_8/O_2 plasmas produced in an industrial TCP reactor under a wide range of plasma conditions. Mass spectral diagnostics were used for analysis of the chemical composition of the plasma neutral components and dominant etching products. A complete dissociation of c-C_4F_8 was found for all the experimental conditions. Analysis of chemical composition of the surface layer as well as the depth elemental distributions in the bulk of the CDO layers were performed by means of X-ray photoelectron spectroscopy (XPS). Deposition of a thin fluorocarbon surface layer was recorded. Correlation between the plasma characteristics and results of the plasma processing is the object of current investigation.

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