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CHEMICAL STRUCTRAL AND DISTRIBUTION CHARACTERISTICS OF THE PULSED PLASMA THRUSTER PLUME DEPOSTION

Abstract

The content of fluorine and the type of fluorocarbon groups influence the electrical and optical properties of the depotition of fluorocarbon films by Pulsed Plasma Thruster. The Plume plasma properties were studied using a current-model triple Langmuir probe. The chemical structure of the films deposited by Pulsed Plasma Thruster was characterized by means of X-ray photoelectron spectroscopy (XPS).Low fluorine-carbon ratio fluorocarbon films are deposited. Chemical bonds CF3,CF2,CF,C-CF(C-O), and C-C(C-H)are observed on the surfaces of the deposited films. Due to the influence of the plasma properties, the chemical structures of these films show significant angular dependence. The F/C ratio of the films showed different trends in different regions with 30 degree angle as the boundary.Compared to the films deposited on the anode side, the F/C ratio of the films deposited at the same angle on the cathode side is lower.Due to the influence of the chemical composition, the optical properties of the deposition show the same trends.