

Destruction of CHF₃ in an Atmospheric Plasma System

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Destruction of CHF₃ investigated in a dielectric barrier discharge reactor immersed in an electrically insulating oil bath. The feed gases were a mixed of CHF₃, O₂ and N₂, with an O₂/N₂ volume ratio of 21/79. We examined the effect of applied voltage, applied frequency and initial CHF₃ concentration in feed on the reaction. The conversion of CHF₃ improved with increased applied voltage and frequency, and the decreased initial CHF₃ concentration in feed. Moreover, an increased in the initial CHF₃ in feed from 5% to 15 % did not change significantly the conversion of CHF₃, or the selectivity of CO and CO₂. Approximately 98.98% of CHF₃ in feed was destructed under an applied voltage of 7 kV, an applied frequency of 30 kHz and an initial CHF₃ concentration of 5%. However, the optical emission of (CHF₃, O₂ and N₂) plasma showed that the products included nitric oxide compounds.