
Profile Characteristics of Sintered SiC Line Etching by Atmospheric Pressure Plasma

Yong Ho Jung ¹, Dong Chan Seok ¹, Gangil Lee ¹, and Seungryul Yoo ¹

¹National Fusion Research Institute, Korea, Republic of

SiC substrate was etched by atmospheric pressure plasma. A circular metal electrode covering one side of an alumina ceramic disk and a SiC substrate composed a DBD reactor with 5 mm spacing. He-NF₃ mixed gas and high bipolar pulse voltage were applied to the DBD reactor and very stable one filament discharge was generated between the ceramic electrode and the SiC substrate. The shape of etch profile was a Gaussian shape. When very low NF₃ concentration was applied, the etch profile became unstable that two Gaussian profiles are overlapped centrally. In a given NF₃ concentration, the etched volume, depth and FWHM (full width of half maximum) increased with the capacitance of the ceramic disk electrode (Cd), while the shape of the etch profile was influenced only by the diameter of the metal electrode and the frequency of the pulse voltage.