

# Measurements of striation formation time in an $N_2$ $\alpha$ RF discharge

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Measurements have been made of the striation formation time of an  $\alpha$ -type RF discharge in nitrogen as a function of pressure, RF frequency, electrode separation and input power. A theoretical model is proposed that yields electron energy and density and striation formation time, given the measured discharge parameters of interelectrode voltage and separation, gas pressure and RF frequency. It is found that increasing the pressure and the electrode separation increase the striation formation time, while increasing the power and the RF frequency decrease the striation formation time. The model predicts that striations in the RF discharge are formed when the plasma charge density reaches some critical value at which the space charge distorts the interelectrode field.

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