Supplementary information

Sample thickness and edge proximity influence spatial behavior of filaments and treatment uniformity of RF cold atmospheric pressure plasma jet

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S1 Discharge appearance

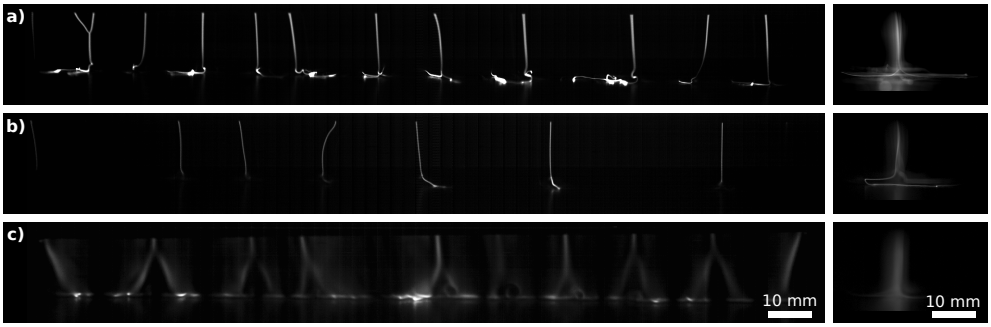

Fig. S1: Front (left) and side (right) views of the RF plasma slit jet (PSJ) discharge ignited in three different gas mixtures at 500 W: (a) 67 slm Ar, (b) 67 slm Ar/1 slm O_2, and (c) 67 slm Ar/1.5 slm N_2 interacting with a dielectric substrate, *i. e.*, in the time frame before the filaments moved onto the treated polypropylene (PP) samples. The distance between the slit outlet and the dielectric surface (6 mm thick mica composite) was 15 mm. The exposure time of the images was 33 µs, corresponding to approximately 450 RF cycles.

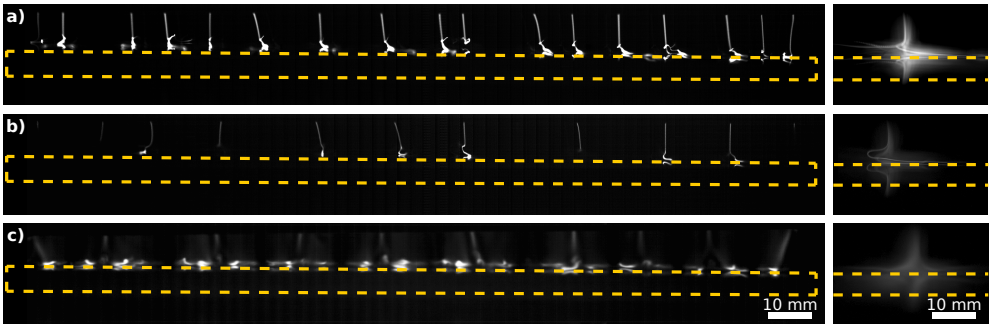

Fig. S2: Front (left) and side (right) views of the RF plasma slit jet (PSJ) discharge ignited in three different gas mixtures at 500 W: (a) 67 slm Ar, (b) 67 slm Ar/1 slm O_2, and (c) 67 slm Ar/1.5 slm N_2 interacting with 5 mm thick PP samples (outlined in yellow dashed line). The distance between the slit outlet and the PP surface was 10 mm. The exposure time of the images was 33 µs, corresponding to approximately 450 RF cycles.

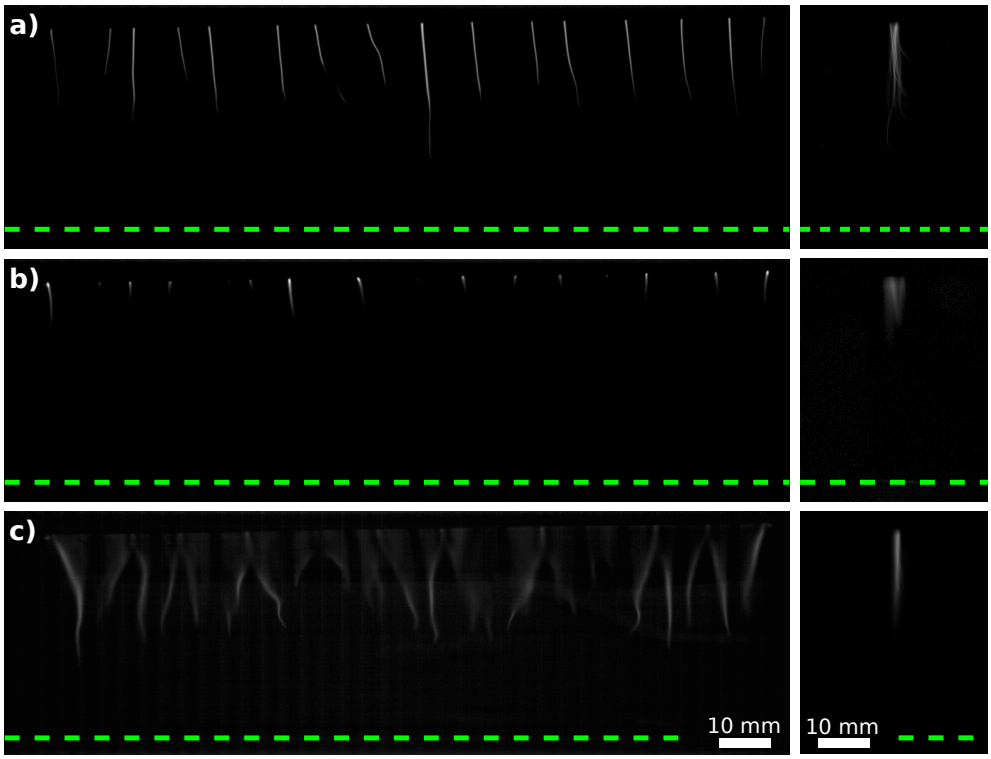

Fig. S3: Front (left) and side (right) views of the RF plasma slit jet (PSJ) discharge ignited in three different gas mixtures at 500 W: (a) 67 slm Ar, (b) 67 slm Ar/1 slm O_2, and (c) 67 slm Ar/1.5 slm N_2 ignited into open space. The distance between the slit outlet and the mica composited covering the grounded electrode (green dashed line) was 40 mm. The exposure time of the images was 33 µs, corresponding to approximately 450 RF cycles.

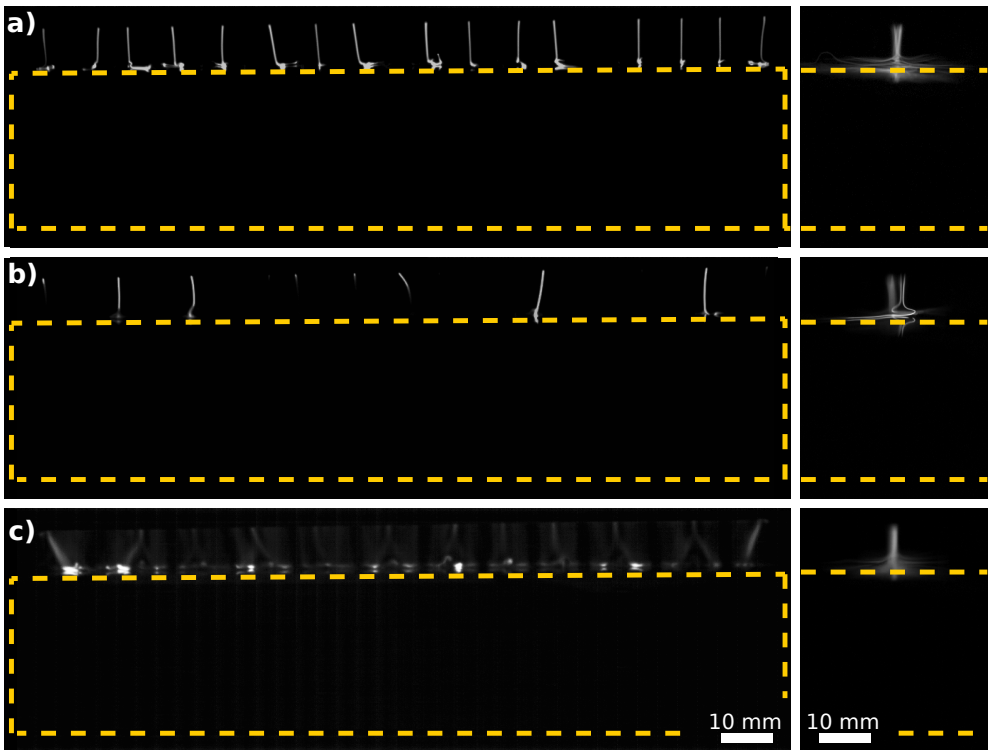

Fig. S4: Front (left) and side (right) views of the RF plasma slit jet (PSJ) discharge ignited in three different gas mixtures at 500 W: (a) 67 slm Ar, (b) 67 slm Ar/1 slm O_2, and (c) 67 slm Ar/1.5 slm N_2 interacting with 30 mm thick PP sample (outlined in yellow dashed line). The distance between the slit outlet and the PP surface was 10 mm. The exposure time of the images was 33 µs, corresponding to approximately 450 RF cycles.