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**Dielectric barrier discharge control and thrust enhancement by diode surface** ANDREY STARIKOVSKIY, MARTIQUA POST, NICKOLAS TKACH, RICHARD MILES, Princeton University, PU TEAM — The problem of the charge removal is very simple: we need a surface which will conduct the current in one direction and will have high resistance in another to avoid the leakage during the forward discharge development. Lateral diode string structures were designed and successfully manufactured on a 3-inch 4H-SiC semi-insulating wafer. The experiments with direct thrust measurements at low pressure conditions were performed as well as experiments of jet formation at pressure P = 1 atm. It was shown that the plasma conductivity is limiting the charge transfer through the surface. The minimal pulse width value could be estimated as a plasma recombination time. The surface becomes effective suppressor for the reverse breakdown when the conductivity of plasma layer is small enough with compare to the surface conductivity. It means that the reverse breakdown with nanosecond-range delay removes efficiently all surface charges. Effective flow acceleration using diode surface is possible with long pulses with allow full plasma recombination between leading and trailing pulse fronts.

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