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High Frequency Self-pulsing Microplasmas¹ JOHN LASSALLE, WILLIAM POLLARD, DAVID STAACK, Texas A&M University — Pulsing behavior in high-pressure microplasmas was studied. Microplasmas are of interest because of potential application in plasma switches for robust electronics. These devices require fast switching. Self-pulsing microplasmas were generated in a variable-length spark gap at pressures between 0 and 220 psig in Air, Ar, N₂, H₂, and He for spark gap lengths from 15 to 1810 μ m. Resulting breakdown voltages varied between 90 and 1500 V. Voltage measurements show pulse frequencies as high as 8.9 MHz in argon at 100 psig. These findings demonstrate the potential for fast switching of plasma switches that incorporate high-pressure microplasmas.

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