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**DC discharge sustained by repetitive nanosecond pulses in nitrogen with a single pair of electrodes**[1] KEISUKE TAKASHIMA, TOSHIRO KANEKO, Department of Electronic Engineering, Tohoku University — To enhance the nitrogen molecule dissociation reactions with the oxygen and water, a nanosecond pulse (NS) sustained DC discharge in nitrogen is experimentally studied in a coaxially arranged discharge cell with a single pair of exposed electrodes. The DC discharge current is sustained by repetitive nanosecond pulse discharge which propagates along the discharge cell and the DC current follows the ionized channel produced by the NS discharge. The total discharge coupling power reaches nearly 1kW power loading to moderated pressure nitrogen flow with relatively low voltage across the gap. The discharge characterization on the repetitive NS discharge and the NS sustained DC discharge with the gas mixture will also be presented.

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