

## Air purification with subnanosecond pulsed streamer plasma

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**AIR PURIFICATION WITH SUBNANOSECOND  
PULSED STREAMER PLASMA: HIGH YIELD  
OZONE PRODUCTION, NO CONVERSION AND CO<sub>2</sub>  
CONVERSION**

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Pulsed streamer plasmas are very useful for different air purification applications such as NO<sub>x</sub> removal and ozone production. Recently, it has been shown that very short pulses are very efficient for these applications<sup>1,2</sup>.

In this paper we present the results of three experiments on air purification plasma applications at atmospheric pressure: ozone production, NO conversion and CO<sub>2</sub> conversion. We generate the plasma with our subnanosecond rise time, variable pulse duration, variable amplitude, repetitive, high-voltage pulse source<sup>3</sup>. The pulse source settings that we varied were: pulse duration, pulse rise time, pulse amplitude, repetition rate and pulse polarity.

The results of the experiments show that we can obtain very high yields in ozone generation (150-350 g/kWh) and NO conversion (15-25 ev/NO molecule) and that also our CO<sub>2</sub> conversion process works very well (20-60 ev/CO<sub>2</sub> molecule). Furthermore, the duration of the applied pulses has little influence on the obtained yields. The rise times of these pulses has a much more pronounced effect: a short rise time results in high yields in all three applications as compared to longer rise times.

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