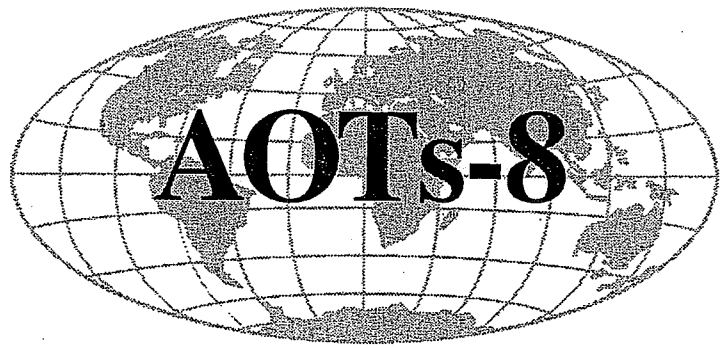

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ABSTRACTS

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EFFECT OF OXYGEN AND GAS TEMPERATURE FOR AMMONIA RADICAL INJECTION DE-NOX USING ONE-CYCLE SINUSOIDAL DIELECTRIC BARRIER DISCHARGE

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NO in N_2 gas was removed by injecting ammonia radicals, which were externally generated in an intermittent dielectric barrier discharge between coaxial cylindrical electrodes with a space of 1.5 mm at an applied peak-to-peak voltage of 3-25 kV. The NO gas contained 2-5.6 % oxygen, and the effect of oxygen on de-NOx was discussed. Concerning on the oxygen concentration contained in NOx gas promotes de-NOx due to the efficient production of OH radicals with oxygen, although the excess oxygen might newly generate NOx. Thus, the excess oxygen reduces the de-NOx efficiency. The NOx reduction decreased at a large applied voltage due to making NH radicals through NH_2 radicals by oxygen atoms. The comparison for the case with and without oxygen by varying the gas temperature in the reaction chamber is also discussed. It is found that the operational temperature for de-NOx is decreased from 1000 ℃ for the case without the dielectric barrier discharge to around 500 ℃ by using the dielectric barrier discharge. However, as a whole, it is found that the optimum ammonia concentration is largely changed by the reaction temperature. In particular, due to oxygen, the reaction temperature for de-NOx lowered in comparison with no oxygen de-NOx case. Commonly it is found that de-NOx becomes maximum at the applied voltage just higher than the initiation voltage of the dielectric barrier discharge.