

Abstract Submitted
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Development of simultaneous decomposition technique of diesel particulate materials and nitric oxides using dielectric barrier discharge¹
YUKIHIKO YAMAGATA, YOZO KAWAGASHIRA, Kyushu Univ., KATSUNORI MURAOKA, Chubu Univ. — Recently, we have proposed a new decomposition technique for environmentally hazardous materials with very low concentration, and successfully decomposed volatile organic compounds. This is based on the combination of dielectric barrier discharge (DBD) with condensation/localization technique. In order to apply this technique to an after treatment of diesel exhaust gas, simultaneous decomposition of diesel particulate materials (DPMs) and nitric oxides was demonstrated. DPMs were collected in a reactor using an electrostatic precipitation operated by a negative corona discharge. At DC 5 kV more than 95% of DPMs were continuously collected for 60 min. Subsequently, the collected DPMs were decomposed in a model gas including NO molecules by a DBD. In the presence of DPMs, a large amount of NO was decomposed compared with that in the absence of DPMs. It is suggested that actual DPMs and NO which acts as the oxidant and reductant, respectively, are decomposed simultaneously and effectively by DBD.

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