

Abstract Submitted
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Decomposition of electrostatic-precipitated diesel particulate materials with nitric oxides using dielectric barrier discharge¹ YUKIHIKO YAMAGATA, YOSUKE FUJII, Interdisciplinary Graduate School of Engineering Sciences, Kyushu Univ., Japan, KATSUNORI MURAOKA, Faculty of Engineering, Chubu Univ., Japan — A newly developed decomposition technique for diesel particulate materials (DPM) and nitric oxides was demonstrated. This is based on the combination of dielectric barrier discharge (DBD) with condensation/localization technique. Using an electrostatic precipitation (EP) operated under a negative corona discharge, DPM were collected in a reactor that is able to generate DBD. More than 95% of DPM emitted from a real diesel engine were continuously collected for 60 min at DC -5 kV. Subsequently, the EP-collected DPM were decomposed in a model gas including NO molecule by DBD operated at AC 60 Hz. In the presence of DPM, a large amount of NO was decomposed in comparison with that in the absence of DPM. It was shown that DPM and NO acting as the oxidant and reductant, respectively, were decomposed simultaneously and effectively by DBD. It is also suggested that water vapor in the exhaust gas improves the NO_x decomposition rate.

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