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91 ディーゼルエンジンから排出される ナノ粒子に及ぼす燃料と後処理装置の影響研究*

Study for Effects of Fuels and After-Treatment Systems on Formation of Particles from Diesel Engine

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Diesel Engine has been developping to control global warming, and improve air quality which is related to world health issues. However, the mechanism of PM -accumulated soot layer on DPF wall- that is emitted to the atmosphere is still unclear. Therefore, this paper would introduce the influence of JIS2D and BDF as fuel on particle number and particle size of nanoparticles that emitted from Diesel Engine using SiC and Cordierite as DPF. Those results shown in this paper.

Key Words: Diesel Engine, BDF, DOC, DPF, nanoparticle, Particle size distribution

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９９　乱流場でのプロパン混合気の着火特性に及ぼす水素添加の影響に関する実験的研究 *

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An Experimental Study on Influence of Hydrogen addition on Ignition and Meso-scale Flames of Propane Mixtures in Isotropic and Homogeneous Turbulence

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This study has examined experimentally the effects of hydrogen addition, equivalence ratios and turbulence on the burning velocity and the ignition characteristics in isotropic and homogeneous turbulence for meso-scale outwardly propagating spherical flames in the range of flame radii r_f approximately from 1 to 5mm, by using lean- and rich-fueled hydrogen added propane mixtures including the equivalence ratio below a lean flammability limit of propane-air mixtures. The mixtures having the same the laminar burning velocity (S_{L0}=25 or 15 cm/s) with different equivalence ratios (ϕ=0.5~1.4) and hydrogen additional rates (δ_H=0.0~1.0) are prepared. In order to quantitatively examine the flame radius and the burning velocity by using sequential schlieren photography. The minimum ignition energy Ei_{min} for each mixture is also defined experimentally at each turbulence intensity. It is found that the burning velocity and the ignition characteristics in isotropic and homogeneous turbulence for meso-scale flames tend to be different between lean and rich mixtures. It also becomes clear that there is a good relationship between Lewis number and Ei_{min}.

Key Words: Premixed Meso-scale Flame, Minimum Ignition Energy, Isotropic & Homogeneous Turbulence, Hydrogen Addition, Propane, Lewis Number, Karlovitz Number