

甲醇柴油与生物柴油微粒排放粒径分布特性Particle Size Distribution of Particulate Matter Emission from the Diesel Engine Burning Methanol-diesel Fuel and Biodiesel

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关键词: 柴油机[■]甲醇柴油[■]生物柴油[■]微粒[■]排放特性[■]粒径分布

摘要: 以石化柴油为参照,在发动机台架上,采用电子低压冲击仪及其附带的两级稀释系统测试了燃用柴油、甲醇柴油和生物柴油排放的不同粒径微粒的数量浓度、体积浓度,分析了发动机转速、负荷以及燃油种类对微粒粒径分布的影响。试验证明:在外特性下,柴油、甲醇柴油排放的微粒数量浓度随转速增大而增加,生物柴油排放的微粒数量浓度随转速没有明显变化规律;在2300r/min,生物柴油和柴油随负荷的减小排放的微粒数量浓度增加;标定功率下,柴油排放微粒的体积浓度大于生物柴油和甲醇柴油,但在核模态范围内,相对于柴油,甲醇柴油排放的微粒数量浓度是下降的,降幅达62.8%,生物柴油是上升的,升幅为30.7%。The characteristics of particulate matter emission from the diesel engine burning diesel fuel(D), methanol-diesel fuel(M20) and biodiesel fuel(B) were tested respectively by using a two-stage dilution system and electrical low pressure impactor and the effects of the engine speed, load, as well as the different fuels on the particle size distribution were analyzed. The results indicated that the quantity of PM emission for methanol-diesel fuel(M20) and diesel fuels increases with rotation speed, but biodiesel doesn't follow this rule on engine performance curve; the peak of PM emission for biodiesel and diesel fuels decreases with load rising at the speed of 2300r/min. On rated power mode, the total volume concentration of diesel is more than that of M20 and B. Compared with diesel, the quantity concentration of biodiesel increases by 30.7%, and the quantity concentration of M20 decreases by 62.8% in nuclear mode.

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