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催化型连续再生颗粒捕集器对生物柴油发动机排放颗粒理化特性的影响 

Effects of CCRT on physical and chemical characteristics of PM emitted from a biodiesel engine

关键词: [催化型连续再生颗粒捕集器](#) [生物柴油](#) [理化特性](#) [颗粒](#)

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摘要: 以某重型柴油机为原机,研究氧化催化转化器(Diesel Oxidation Catalyst,简称“DOC”)与催化型颗粒捕集器(Catalyzed Diesel Particulate Filter,简称“CDPF”)结合而成的催化型连续再生颗粒捕集器(Catalyzed Continuously Regeneration Trap,简称“CCRT”)对燃用B20混合燃料柴油机颗粒排放理化特性的影响.试验结果表明:生物柴油发动机安装CCRT装置后排放的颗粒质量和数量均显著低于原机.CCRT装置对不同粒径颗粒的捕集效率不同,对聚集态颗粒的捕集效果略优于核态颗粒.与原机相比,安装CCRT后PAHs总排放量下降,在检测到的20种PAHs中有17种排放量减少.按环数比较,原机及安装CCRT装置后PAHs均以三环和四环为主.CCRT装置的安装使生物柴油发动机排放颗粒中化学成分毒性降低.

Abstract: A heavy diesel engine was tested on the engine test bench to analyze the physical and chemical characteristics of particulate matter (PM) emitted from the original biodiesel engine and the engine with CCRT equipment. Results showed that the application of CCRT decreased the PM emissions in terms of both number and mass fractions dramatically. The reduction ratio varied with the difference of PM diameter. The reduction ratio of accumulation mode particles was higher than that of nuclei mode particles. Compared to the original one the emissions of PAHs decreased across CCRT. Among the 20 kinds of detected PAHs, emission concentrations of 17 kinds of PAHs decreased. Three-ring and four-ring PAHs still accounted for the major proportions even if CCRT was connected to the engine. According to the analysis, chemical toxicity of PM emitted from biodiesel engine decreased when CCRT was applied.

Key words: [CCRT](#) [biodiesel](#) [physical and chemical characteristics](#) [PM](#)

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