

DIESEL SOOT COMBUSTION WITH PEROVSKITE CATALYSTS

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Description

Diesel soot emissions from stationary or mobile sources can be reduced through physical trapping in particulate filters until periodical in situ combustion takes place. This study focuses on the development of several perovskites for the catalytic combustion of diesel particulates in multifunctional catalytic reactors. Several perovskites, with BET surface areas of 20–30 m²/g, were prepared by the solution combustion synthesis method and were characterized by XRD, SEM, TEM, and TPD techniques. Catalytic activity tests have shown that the most promising catalysts, namely, perovskite catalysts with Cr in the B site and Tb or Pr in the A site, can ignite soot combustion well below 400°C, i.e., at a temperature 200°–250°C lower than that of noncatalytic diesel soot combustion. The best catalytic formulation was deposited on a full-scale wall-flow filter and tested against the soot emissions of a diesel engine, resulting in ...