عنوان مقاله:

Role of Nanoparticles as Performance and Emission Improver of Compression Ignition Engine Fuels: An Overview

محل انتشار:

فصلنامه انرژی و محیط زیست ایران, دوره 10, شماره 2 (سال: 1398)

تعداد صفحات اصل مقاله: 7

نویسندگان:

A. Kumar Singh - *Division of Agricultural Engineering, Indian Agricultural Research Institute, Pusa campus, New Delhi, India*

R. Patle - *Central Institute of Agricultural Engineering, Bhopal, India*

M. Das - *Division of Agricultural Engineering, Indian Agricultural Research Institute, Pusa campus, New Delhi, India*

R. Sanodiya - *Division of Agricultural Engineering, Indian Agricultural Research Institute, Pusa campus, New Delhi, India*

خلاصه مقاله:

Applications of nano-scaled energetic materials in diesel and diesel-biodiesel blends as catalytic agents have emerged contemporarily in pace to develop an efficient and eco-friendly alternative fuel for compression ignition (CI) engines. Inclusion of nanoparticles as additives for CI engine fuels promises as overall improver of engine performance and emission characteristics. However, simultaneous control on engine performance parameters and emission characteristics is usually difficult. Dispersion of nano-additives improves combustion efficiency by altering specific fuel properties of diesel. Average particle size of 40-50 nm facilitate greater surface-to-volume ratio, hence ensure more complete combustion through further chain reactions during combustion. Nanoparticles as catalytic agents in diesel and its proportionate blends have recently emerged as game changer but their potential is in-fact not fully explored for market acceptability. The following are the major challenges that are to be considered in future researches: (a) There is a need of on-road testing in real ambient conditions, (b) Effects of exhaust emission fuelled with nanocatalysts on human breathing, (c) Overall effects on diesel engines of agricultural tractors and other heavy earth moving machines which are designed for high load factors, and (d) Effects of such modified fuels on driving habits of consumers.

کلمات کلیدی:

Compression Ignition Engine Fuels, Emission Characteristics, Nanoparticles, performance