

Biodiesel Emulsification Techniques and Parameters Affecting the Stability of Emulsion: A Review [†]

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Abstract: Increasing environmental concerns and the continuous up-gradation of vehicle emission standards have shown considerable interest in cleaner diesel fuels. CI engines are the prime contributors to nitrous oxides (NO_x) and particulate matter (PM) emissions. NO_x emissions are caused due to higher combustion temperatures in diesel engines. Presently many researchers are working to reduce NO_x emissions. Out of several methodologies to diminish the emissions from a diesel engine, the application of water mixed diesel in the form of emulsion has grasped the adequate attention of the fuel research community. The vaporization of water in the combustion chamber leads to reduced peak temperature, whereas an increase in water content leads to incomplete combustion. In the water emulsified diesel technique, the micro explosion process plays an important role. It has sufficient potential to reduce nitrous oxides and particulate matter emissions simultaneously with significant improvement in combustion characteristics. The various preparation techniques of emulsion, characterization, and parameters affecting emulsion stability are critically reviewed and analyzed.

Keywords: biodiesel; emulsion; stability.

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Conflicts of Interest

The authors declare no conflict of interest.