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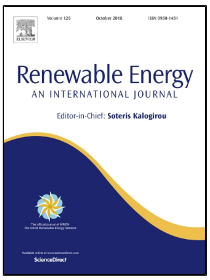


Characterization of biodiesel production (Ultrasonic-assisted) from Evening-primroses (*Oenothera lamarckiana*) as novel feedstock and its effect on CI engine parameters

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# Characterization of biodiesel production (Ultrasonic-assisted) from Evening-primroses (*Oenothera lamarckiana*) as novel feedstock and its effect on CI engine parameters

S.S. Hoseini[1], G. Najafi*[1], B. Ghobadian[1], R. Mamat[2], M. T. Ebadi[1] and Talal Yusaf[3]

[1]Tarbiat Modares University, Tehran, Iran

[2]Universiti Malaysia Pahang, Malaysia

[3]University of Southern Queensland, Australia

* Corresponding author: g.najafi@modares.ac.ir, Tel.: +982148292322, fax: +982148292200

**Abstract**

In this research, Oenothera lamarckiana seed oil (OLO) has been investigated as a novel feedstock for biodiesel production in Iran. Ripe shrubs of Oenothera lamarckiana were collected from farms in Kohgiluyeh and Boyerahmad (around city of Yasouj) and seeds were extracted after drying of the stems. Then oil was extracted by a chemical method (Soxhlet extraction system). A maximum oil content of 26% has been found by chemical method extraction. Physical and chemical characteristics of *Oenothera lamarckiana* oil (OLO) have been investigated. Biodiesel has been prepared using Ultrasonic set-up. By using the response surface methodology (RSM), the biodiesel production process was optimized to obtain the highest yield of biodiesel conversion. In this research, reaction parameters such as molar ratio (methanol to oil), reaction time, amplitude and pulse are studied. Moreover, the performance and the exhaust emissions of a diesel engine have been investigated. All of the experiments are performed at a constant speed of 2100 rpm at loads of 0%, 25%, 50%, 75%, and 100%. The results of research showed that the conversion of biodiesel was 92.06% under the