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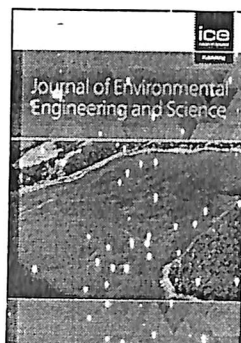
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Application of green solvent for biodiesel production from sesame oil

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Abstract

The use of abundant biosources for biodiesel production has attracted the attention of various academicians, as well as the industrial communities. This work provides an alternative biodiesel-manufacturing process that uses green chemistry principles in the form of deep eutectic solvents (DESs) to eliminate use of hazardous chemicals. Three different types of DES mixtures, glycerol-based (DES 1), urea-based (DES 2) and oxalic-acid-based (DES 3), were used with sesame oil. The laboratory-scale results showed that DES 1 and DES 2 were more effective for improving the yield of fatty acid methyl esters. Furthermore, a molar ratio of 6:1 and a contact time of 60 min proved to be optimum conditions. It was possible to get around 12% higher yield compared with the non-DES process under optimum conditions, suggesting that DESs can be used effectively as a co-solvent. The properties of purified biodiesel met the ASTM D 6751-19 standards.

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References

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