

## عنوان مقاله:

Transesterification of vegetable oils using ultrasonic-assisted heterogeneous process: A response surface methodology-based modeling and interactions between variables

## محل انتشار:

هفتمین کنگره ملی مهندسی شیمی (سال: 1390)

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## خلاصه مقاله:

Intensification of biodiesel production process using low frequency ultrasonic irradiation (20 kHz, 200 W) is attempted. Effects of five process variables in the ultrasonic-assisted and SrO-catalyzed transesterification of vegetable oils i.e. ultrasonic pulse on (s) and pulse off (s) durations, reaction time (min), power (%) and oil volume (ml) were investigated. Response surface technology was employed and a quadratic model was developed with 97 % of confidence level. The optimum conditions were found to be at an ultrasonic pulse on of 9 s, pulse off of 2 s, a reaction time of 30.7 min, at a power of 130 W and an oil amount of 52 g. This model was tested with other vegetable oils i.e. palm oil, canola oil, sunflower oil and corn oil to demonstrate the applicability of this model. The model was found to be applicable for different types of oil with errors of less than 10%. SrO catalyst demonstrated minimum leaching while FFA content was mainly responsible for the different yield obtained with different oils.

## کلمات کلیدی:

Ultrasonic; Transesterification; Biodiesel; Response Surface Methodology; Interaction; Vegetable Oil

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/341127>

