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## (54) Title of the invention : A NOVEL DESIGN OF SEQUENTIAL COMBINATION OF ULTRASOUND AND MICROWAVE SYSTEM USED FOR INTENSIFICATION OF SYNTHESIS OF BIODIESEL FROM VEGETABLE/WASTE OILS

(51) International classification	:H01L0021670000, A61P0009100000, A61P0019020000, A61B0008000000, G11B0027100000	<ul> <li>(71)Name of Applicant :</li> <li>1)PANDIT DEENDAYAL ENERGY UNIVERSITY Address of Applicant :PANDIT DEENDAYAL ENERGY UNIVERSITY KNOWLEDGE CORRIDOR, RAISAN</li> <li>VILLAGE, GANDHINAGAR-382 007, GUJARAT, INDIA</li> </ul>
<ul> <li>(86) International</li> <li>Application No Filing Date</li> <li>(87) International</li> <li>Publication No</li> <li>(61) Patent of Addition</li> <li>to Application Number Filing Date</li> <li>(62) Divisional to</li> <li>Application Number Filing Date</li> </ul>	:NA :NA :NA :NA :NA :NA	Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)DR.SURENDRA SINGH KACHHWAHA Address of Applicant :PANDIT DEENDAYAL ENERGY UNIVERSITY KNOWLEDGE CORRIDOR, RAISAN VILLAGE, GANDHINAGAR-382 007, GUJARAT, INDIA 2)DR.PRAVIN KODGIRE Address of Applicant :PANDIT DEENDAYAL ENERGY UNIVERSITY KNOWLEDGE CORRIDOR, RAISAN VILLAGE, GANDHINAGAR-382 007, GUJARAT, INDIA

## (57) Abstract :

The titled invention A novel design of sequential combination of ultrasound and microwave system used for intensification of synthesis of biodiesel from vegetable/waste oils discloses the Design and fabrication of sequential system that incorporates both ultrasound and microwave irradiations for efficient biodiesel production. Experimental study on production of biodiesel from waste cooking oil (WCO) using sequential ultrasound and microwave method. Optimise biodiesel production by investigating interaction effects among process variables {methanol to oil molar ratio, catalyst loading, temperature and time)



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