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UniKL Author	:	Faridah Ghafar; Norzahir Sapawe; Amin Safwan Alikasturi
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Abstract	:	<p>Fatty acid methyl esters or commonly known as biodiesel has emerged as a promising alternative to petroleum-based diesel. Biodiesel is biodegradable, renewable, high lubricity, non toxic, good viscosity and have similar properties to diesel. In this study, the methyl ethyl esters were produced from waste cooking oil using nickel supported calcium oxide derived from waste cockle shells (Ni/CaO) as catalyst. The catalysts were synthesized using electrochemical method at 0.5 wt% nickel loading. The methyl ethyl esters were produced via simultaneous esterification and transesterification at different catalyst dosages (1 to 7 w/w%), reaction temperatures (60 to 90 oC) and reaction times (3 to 7 h) with constant molar ratio methanol to oil of 20:1. The high yield of methyl ethyl esters were obtained at 3 w/w% of catalyst dosage, 80 oC of reaction temperature and 5 h of reaction time.</p>