

Table 8.1 Summary of the experimental work

Chapter	Heterogeneous catalyst	Catalyst synthesis method	WVO (Optimized condition)	FAME conversion	Karanja oil (Optimized condition)	FAME conversion
4	Beta-potassium dizirconate (β - $K_2Zr_2O_5$)	Solid state	4.0 wt% catalyst; 1:10 molar ratio (oil:methanol); 65 °C temperature; 120 min time; 600 rpm stirring; Reusability 7 times	96.61±0.2%	3.0 wt% catalyst; 1:8 molar ratio (oil:methanol); 65 °C temperature; 120 min time; 600 rpm stirring; Reusability 7 times	97.24±0.31%
5	Barium zirconate ($BaZrO_3$)	Co-precipitation	1.2 wt% catalyst; 1:27 molar ratio (oil:methanol); 65 °C temperature; 180 min time; 600 rpm stirring; Reusability 9 times	96.91±0.42%	1.0 wt% catalyst; 1:27 molar ratio (oil:methanol); 65 °C temperature; 180 min time; 600 rpm stirring; Reusability 9 times	97.82±0.5%
6	Calcium aluminium oxide ($Ca_2Al_2O_5$)	Solid state	3.0 wt% catalyst; 1:21 molar ratio (oil:methanol); 65 °C temperature; 150 min time; 700 rpm stirring; Reusability 7 times	95.24±0.1%	2.5 wt% catalyst; 1:18 molar ratio (oil:methanol); 65 °C temperature; 150 min time; 700 rpm stirring; Reusability 7 times	97.05±0.21%

7	Beta-tricalcium phosphate (β - $\text{Ca}_3(\text{PO}_4)_2$)	Calcination	4.0 wt% catalyst; 1:21 molar ratio (oil:methanol); 65 °C temperature; 180 min time; 700 rpm stirring; Reusability 7 times	93.02±0.6%	4.0 wt% catalyst; 1:18 molar ratio (oil:methanol); 65 °C temperature; 180 min time; 700 rpm stirring; Reusability 7 times	94.84±0.51%
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