

Supplementary Materials:

Table S1. Reaction products by using different catalysts

Characteristics of catalyst		Characteristics of reaction products, wt.%					
Catalyst	Calcination temperature, °C	G	MG	DG	TG	FAME	Sum
PEG1	375	0.2	6.5	13.1	52.7	22.5	95
PEG1	400	0.8	6.2	5.5	12	73.9	98.4
PEG1	450	0.1	5.3	14.1	63.2	16.6	99.3
PEG1	550	0	0.2	4.7	90.4	2.1	97.4
PEG2	400	0.1	4.6	13.5	58	22.5	98.7
PEG2	450	0.1	6.1	5.5	10.9	73.5	96.2
PEG2	500	0.1	5.1	4.2	9.5	80.2	99.12
PEG2	550	0.2	7.9	8.4	20.9	61.3	98.7
PEG3	400	0.1	4.6	13.5	58	20.6	96.9
PEG3	450	0.2	7.7	14.2	42.4	35.4	
PEG3	500	1.2	9.1	10.6	22.9	50.8	94.5
PEG3	550	0.2	7.7	14.2	47.2	30.5	99.8
PEG3	600	0.2	0.2	4.7	83.6	10.1	98.8
PEG4	400	0	0.1	2.3	95.7	0.5	98.6
PEG4	450	0.1	2.8	11.8	70.1	12.6	97.4
PEG4	500	0.2	3.7	13.2	53.9	21.2	92.3
PEG4	550	0.2	3.5	13.1	52.2	30.5	99.5
PEG4	600	0.2	3.1	13.1	55.1	28.2	99.7
PEG4	650	0.1	4.3	13.5	59.7	20.1	97.7

Reaction conditions: catalyst 7 wt.% of oil, methanol/oil molar ratio 27/1, temperature 65 oC, time 6h.

Figure S1. XRD analysis of PEG1 catalyst Calcined at 400 °C.

Kampars-K5 (Coupled TwoTheta/Theta)

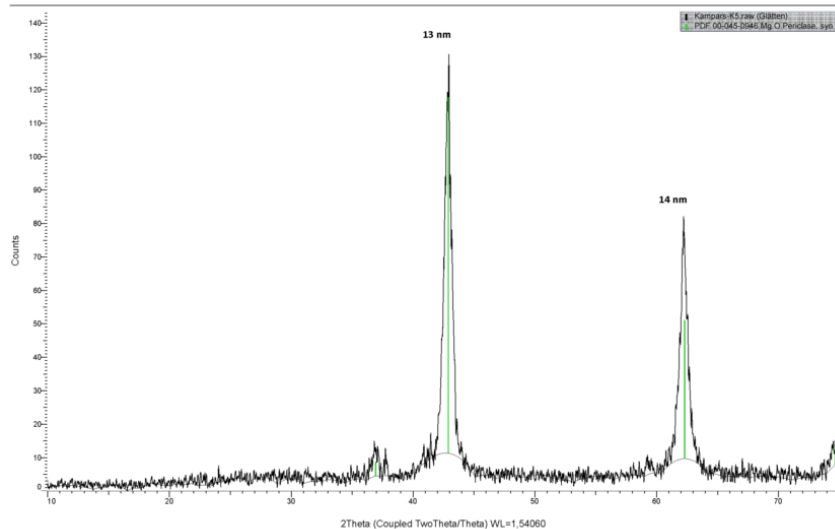


Figure S2. XRD analysis of PEG2 catalyst Calcined at 400 °C.

Kampars-RK-K18 (Coupled TwoTheta/Theta)

