

One-Pot Solvent-Free Synthesis of *N,N*-Bis(2-Hydroxyethyl) Alkylamide from Triglycerides Using Zinc-Doped Calcium Oxide Nanospheroids as a Heterogeneous Catalyst

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Table S1. The chemical analysis of vegetable oils.

Feedstock	Free fatty acid value (wt%)	Moisture content (wt%)	Saponification value (mg KOH/g)	Iodine value
Waste soybean oil	2.1	0.35	192.4	101.4
Karanja oil	4.4	0.37	186.0	97.6
Jatropha oil	8.2	0.41	196.1	102.3
Virgin Soybean oil	0.2	0.31	191.3	121.4
Animal fat	1.4	0.36	193.1	46.8

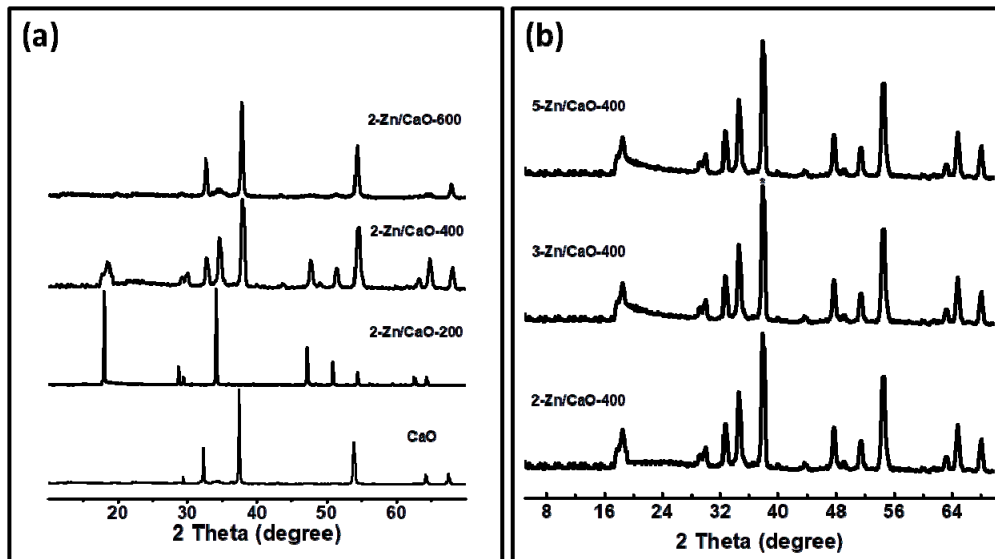


Figure S1. Comparative powder XRD patterns of (a) CaO with Zn/CaO calcined at different temperatures, (b) Zn/CaO with different doping percentage of zinc ion.

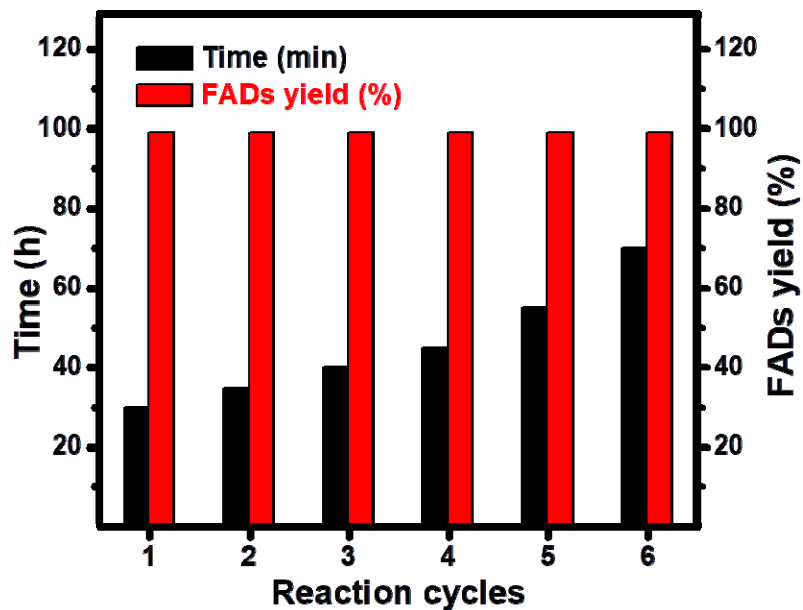


Figure S2. Recyclability studies of the catalyst towards the aminolysis of the JO. Reaction conditions; diethanolamine:feedstock = 5:1 (m/m), catalyst amount = 4 wt% of feedstock, temperature = 90 °C

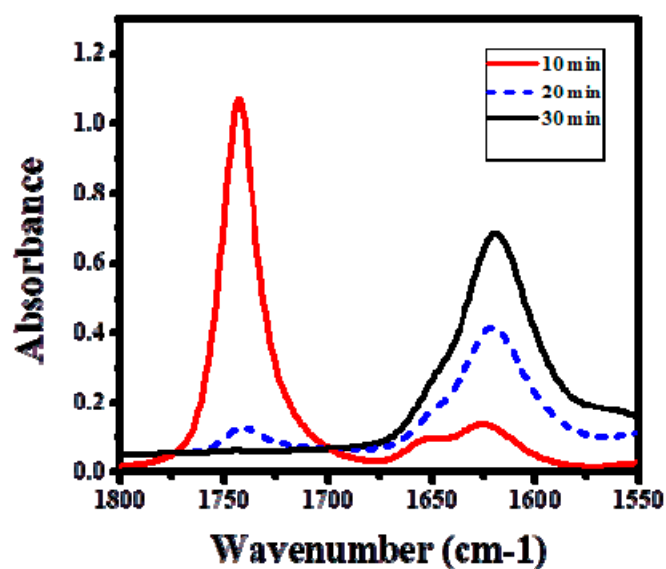


Figure S3. Progress of the aminolysis of JO with diethanolamine followed by FTIR spectroscopy. Reaction conditions; diethanolamine: cotton seed oil = 5:1 (m/m), catalyst amount = 4 wt%, temperature = 90 °C.

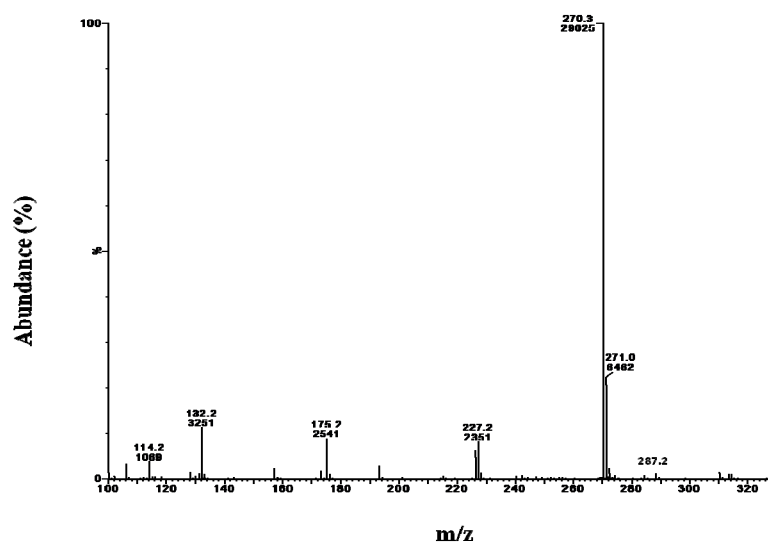


Figure S4. Mass spectrum of fatty acid diethanolamide derived from methyl laurate.