A Novel Heterogeneous Superoxide Support-Coated Catalyst for Production of Biodiesel from Roasted and Unroasted *Sinapis arvensis* Seed Oil

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Characterization

IR spectroscopy was used to analyze the type of functional groups present on the catalyst. The FTIR spectra of NaO_2/SiO_2/PFC/Granite is shown in Figure S1. The peak appears at 775 cm^{-1} suggested Si-O-Si stretching vibrations. Hence, the region 781-436 cm^{-1} corresponded to the presence of quartz. Also, a signal at 997 cm^{-1} was assigned to characteristic bands of silicates, which are related to stretching vibrations of Si-O or Al-O [1]. The peak at 1373 cm^{-1} indicated sodium and potassium linkages to oxygen present in granite [2]. The signal at 1340 cm^{-1} was attributed to ferrihydrite. The sharp bands at 699 cm^{-1} were attributed to Fe-O-H bending vibrations [3].

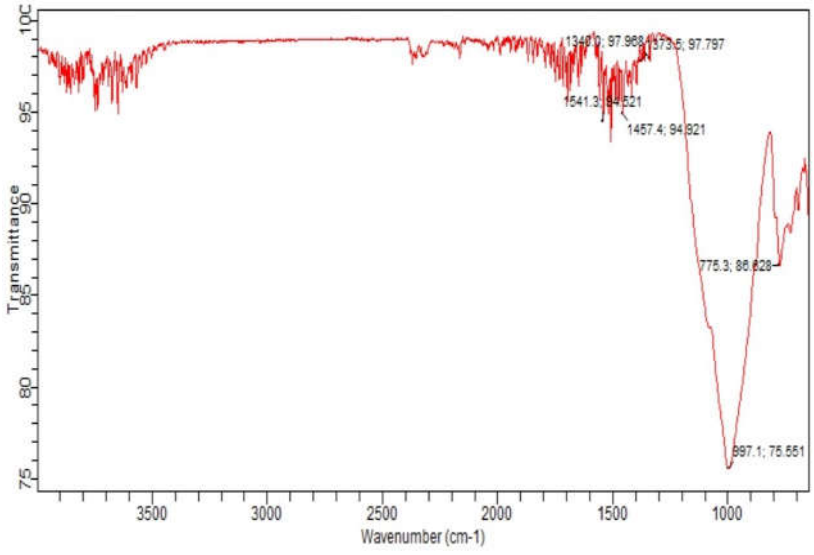

Figure S1. FTIR spectra of NaO_2/SiO_2/PFC/Granite

SEM analysis was used to morphologically observe the prepared NaO_2/SiO_2/PFC/Granite. It was comprised of a rough surface with porous structure. The porous structure provided a large surface area for reaction. It was observed that the prepared catalyst agglomerated together on the composite support surface, as depicted in Figure S2.

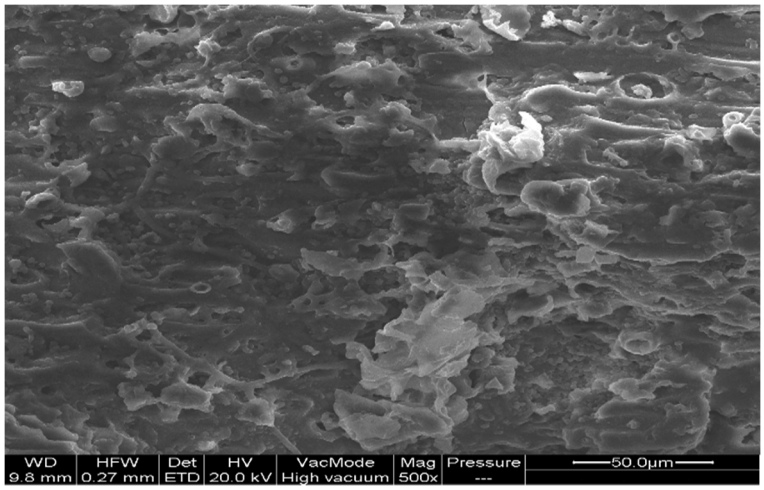

Figure S2. SEM of NaO_2/SiO_2/PFC/Granite

References

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