Title: CATALYTIC PYROLYSIS OF GLYCEROL IN THE PRESENCE OF NICKEL (II) SCHIFF BASE COMPLEX SUPPORTED IN SBA-15: KINETIC AND PRODUCTS (TG-FTIR AND PY-CG/MS)

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CATALYTIC PYROLYSIS OF GLYCEROL IN THE PRESENCE OF NICKEL (II) SCHIFF BASE COMPLEX SUPPORTED IN SBA-15: KINETIC AND PRODUCTS (TG-FTIR AND PY-CG/MS)

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Highlights:

- The presence of the catalyst in pyrolysis of glycerol was considered satisfactory.
- Kinetic study provides significant data for the evaluation of catalyst activity.
- Catalytic pyrolysis of glycerol showed lower activation energy.
- Production of greater quantity and variety of chemicals with higher added value.

ABSTRACT

This work proposes the conversion of glycerol into higher added value products through its pyrolysis in the presence of the catalyst [Ni(L1)]SBA-15. The catalyst, an SBA-15 silica, was anchored with Schiff base complex [Ni(L1)], L1 being a Schiff Base with diethylenetriamine. The materials were characterized by the techniques of X-ray diffraction, Fourier transform infrared (FTIR) spectromicroscopy, UV-visible absorption spectroscopy, Raman spectroscopy, N_2 physisorption, and thermal analysis (TGA/DTG/DSC). The kinetic study of the thermal and thermal/catalytic pyrolysis of glycerol using the iso-conversional methods proposed by KSA (Kissinger-Akahira-Sunose) and FWO (Flynn-Wall-Ozawa). The results show a reduction of activation energy in the presence of [Ni(L1)] SBA-15 compared to SBA-15 and glycerol. The products of the pyrolysis of glycerol were produced and identified by a pyrolyzer coupled to GC/MS