

From the journal:

Sustainable Energy & Fuels

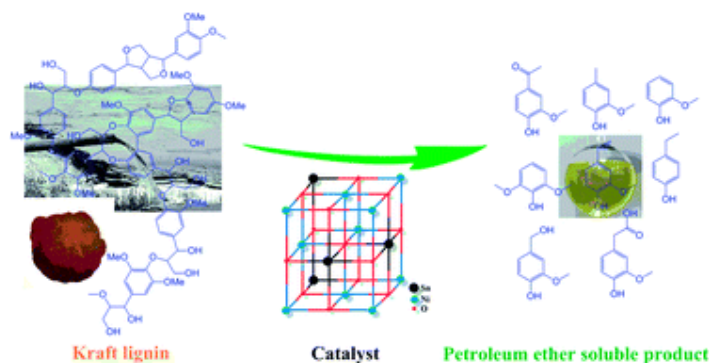
Catalytic depolymerization of Kraft lignin to produce liquid fuels *via* Ni–Sn metal oxide catalysts†

Baikai Zhang,^a Wenzhi Li,^{ID} *^a Xiaomeng Dou,^a Jindong Wang,^a Lele Jin,^a Ajibola T. Ogunbiyi^a and Xiaosen Li^b

[Author affiliations](#)

Abstract

In this study, Ni–Sn metal oxide catalysts, with strong Lewis acidity, were prepared and applied in lignin depolymerization to produce liquefied fuels. The Ni–Sn metal oxide catalysts could cleave the lignin linkages and stabilize the reaction intermediates due to the high Lewis acidity and the hydrogenation of nickel sites. When the molar ratio of nickel to tin was 1 : 3, a liquid product yield of 90% and a petroleum ether soluble product (mainly monomers and dimer degradation products) yield of 60% were obtained at 310 °C for 24 h. Under these reaction conditions, the petroleum ether soluble product had a higher heating value (HHV) (36.45 MJ kg⁻¹) than Kraft lignin (25.83 MJ kg⁻¹). A meticulous study on Ni–Sn metal oxide catalysts revealed that Lewis acidity and the synergistic effect between Ni and Sn played an important role in lignin depolymerization.



[About](#)
[Cited by](#)
[Related](#)

Buy this article £42.50*

* Exclusive of taxes

This article contains 8 page(s)

Sign in With your membership or subscriber account

Supplementary files

- [Supplementary information](#) PDF (135K)

Article information

DOI

<https://doi.org/10.1039/C9SE01089K>

Article type

Paper

Submitted

12 Nov 2019

Accepted

13 Dec 2019

First published

02 Jan 2020

DownloadCitation

Sustainable Energy Fuels, 2020, **4**, 1332-1339

- Baikai Zhang
- Wenzhi Li
- Xiaomeng Dou
- Jindong Wang
- Lele Jin
- Ajibola T. Ogunbiyi
- Xiaosen Li

Go



