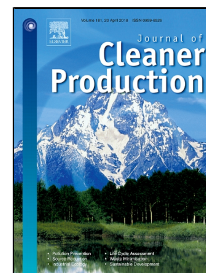


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Catalytic Upgrading of Pyrolysis Vapours: Effect of Catalyst Support and Metal Type on Phenolic Content of Bio-oil



Elif Yaman, Adife Seyda Yargic, Nurgul Ozbay, Basak Burcu Uzun, Konstantinos G. Kalogiannis, Stylianos D. Stefanidis, Eleni P. Pachatouridou, Eleni F. Iliopoulou, Angelos. A. Lappas

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3 **Highlights**

- 4 • Acid pre-treated walnut shell was used as a lignocellulosic biomass source.
- 5 • Acid pre-treatment decreased ash content and increased higher heating value.
- 6 • Metal loaded microporous or mesoporous catalysts were used in pyrolysis
7 experiments.
- 8 • Metal impregnation of parent materials changed the mechanism of oxygen removal.
- 9 • Catalytic materials selectively increase the phenolic content of the bio-oil.

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