

[Catalytic copyrolysis of cork oak and bio-oil distillation residue](#)

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Abstract:

The atmospheric distillation residue (ADR) of cork oak (CO) pyrolysis oil was used as the co-feeding material for the catalytic pyrolysis of CO over HZSM-5 catalysts to improve the formation of aromatic hydrocarbons. Although the non-catalytic copyrolysis of CO and ADR did not improve the formation of aromatic hydrocarbons, the catalytic copyrolysis of CO and ADR promoted the synergistic formation of aromatic hydrocarbons. HZSM-5 (30), having a lower $\text{SiO}_2/\text{Al}_2\text{O}_3$ (30), showed better performance for the formation of aromatic hydrocarbons than HZSM-5(80) because of its higher acidity. The catalytic copyrolysis of CO and ADR also decreased the formation of coke. The largest quantity of aromatic hydrocarbons was obtained from the catalytic copyrolysis of CO and ADR over HZSM-5 (30) at 600°C, whereas the lowest coke yield was achieved at 700°C. When the catalyst to sample ratio was increased from 2:1 to 5:1, the synergistic formation of aromatic hydrocarbons was limited, resulting in a lower experimental yield of aromatic hydrocarbons than the theoretical yield. A lower coke yield was also achieved at a high catalyst to sample ratio (5:1).

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