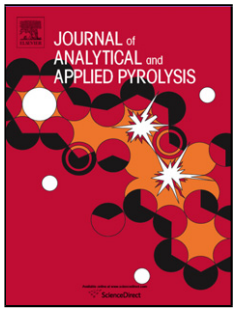

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Catalytic upgrading of volatile from coal pyrolysis over faujasite zeolites

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Highlights:

- Four faujasite zeolites were studied to upgrade coal pyrolysis volatile by Py-GC/MS
- Dealuminated Y zeolites can significantly improve the yield of light aromatics
- Changes in porosity and acidity have great impact on zeolites catalytic activity

Abstract:

Catalytic upgrading of volatile from coal pyrolysis is a promising approach to convert heavy components to light aromatic hydrocarbons. In this work, four faujasite zeolites with different porosity and acidity, NaY, HY and two dealuminated Y zeolites including hydrothermal treatment Y (HTY) zeolite and hydrothermal treatment-acid leaching Y (HTY-AL) zeolite, were studied to upgrade coal pyrolysis volatile using pyrolysis-gas chromatography/mass spectrometry (Py-GC/MS). The results show that they can significantly improve the yield of light aromatic hydrocarbons such as benzene, toluene, ethylbenzene, xylene, and naphthalene (BTEXN). Compared to NaY and HY zeolite, HTY and HTY-AL zeolite have better catalytic performance for the formation of light aromatics, with the yield of BTEXN increases from 0.78 wt%