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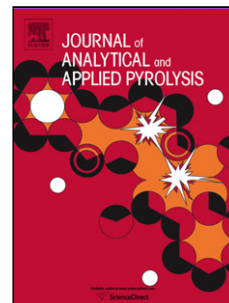
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Resource Recovery via Catalytic Fast Pyrolysis of Polystyrene using Zeolites

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Highlights

- Catalytic fast pyrolysis was carried out in micropyrolyzer-GC/MS set-up
- Eight zeolites belonging to ZSM5, zeolite- β and zeolite-Y families were used
- Zeolite- β Hydrogen results in 55 wt.% of benzene production at 400 °C
- Yields of benzene, dimers and α -methyl styrene correlate well with Brønsted acidity
- Yields of indene and naphthalene derivatives correlate well with specific surface area

Abstract

This study focuses on selective production of valuable chemicals from polystyrene (PS) via catalytic fast pyrolysis using micropyrolyzer-GC/MS set-up. Catalytic fast pyrolysis of PS was performed using eight different zeolites belonging to ZSM-5, zeolite- β and zeolite-Y families. The catalysts were characterized for the strength of Brønsted acid sites and pore size distribution. The composition of PS:catalyst was optimized at 2.3 ± 0.2 wt./wt. to enhance the yield of benzene, at the same time reduce the yield of condensed ring fragments like indene and indane derivatives. The yields of various products correlated well with specific properties of

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