

[Effective use of aluminum-plastic laminate as a feedstock for catalytic pyrolysis over micro and mesoporous catalysts](#)

M. Z. Siddiqui, Y.-K. Park, Y. Kang, A. Watanabe, S. Kim, Y.-M. Kim

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Abstract:

Thermal and catalytic pyrolysis of aluminum plastic laminate over zeolite catalysts were performed to produce high quality oil. Thermogravimetric analysis of aluminum plastic laminate indicated that the decomposition kinetics of aluminum plastic laminate were changed by interactions between the polymer components during the thermogravimetric analysis of aluminum plastic laminate. The effects of aluminum foil on the aluminum plastic laminate decomposition kinetics were negligible. The catalytic pyrolysis of aluminum plastic laminate over the acid catalysts using tandem-micro reactor-gas chromatography/mass spectrometry produced large amounts of aromatics due to the properties of the main polymers, polyethylene and poly (ethylene terephthalate), in aluminum plastic laminate. Among three catalysts, HZSM-5 ( $\text{SiO}_2/\text{Al}_2\text{O}_3$ , 23), HY(30), and Al-MCM-41 (20), HZSM-5 (23) had the highest efficiency on aromatics production followed by HY(30) and Al-MCM-41 (20). Co-feeding aluminum plastic laminate to the catalytic pyrolysis of paper over HZSM-5 (23) and HY(30) was also effective on aromatics production, highlighting the potential use of aluminum plastic laminate to enhance the synergistic aromatics formation during the catalytic pyrolysis of biomass.

\* Excerpted from online journal website (Click the title)

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