Effects of synthesis condition on the performance of coal fly ash-derived catalysts in LDPE pyrolysis

최유성[1,2], 나정걸[1,*], 유위석[1,2], 정수현[1]
[1]한국에너지기술연구원; [2]연세대학교
(narosu@kier.re.kr*)

Low-priced solid acid catalysts from coal fly ash (FSAs) have been synthesized. FSAs were prepared by a simple activation method which basically includes NaOH treatment of coal fly ash by fusion method at high temperature, followed by aging process at room temperature. The effects of NaOH/fly ash fusion ratio, solid/liquid ratio of fused materials and water, and pH of aging solution on the properties of catalysts were investigated by XRD, SEM, BET and NH3-TPD. The catalytic performance of FSAs was evaluated in terms of degradation temperature shift and boiling point distribution of liquid products in LDPE pyrolysis. Due to use of cheap silica-alumina source and simple synthesis method, it is believed that FSAs are very useful for catalytic pyrolysis of polymeric wastes.