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# Hydrolysis of waste monomer casting nylon catalyzed by solid acids

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**Abstract**

Decomposing the waste polyamide material onto economically-valuable monomer under the relatively mild hydrothermal conditions is a key technology for the development of wastes recycling. This reaction is traditionally catalyzed by homogeneous acids which would result in the difficult separation and equipment corrosion. We first indicated the solid catalysts for the hydrolysis of waste monomer casting nylon in subcritical water, including a series of γ-$Al_2O_3$ supported solid acid catalysts and some commercial zeolites. Zeolite Hβ-25 exhibited the highest activity among the H-form zeolites, and a better recyclability than the γ-$Al_2O_3$ supported solid acids. According to the kinetic analyses and reaction pathway exploration, the generation and consumption of linear oligomers, which are the intermediate products, were accelerated when using the zeolite Hβ-25 because of the microporous structure.

Keywords: Catalyzed hydrolysis; Solid acids; Waste nylon; Reaction kinetics