

عنوان مقاله:

The Kinetic Study of Oleamide Synthesis: Effect of Oleic Acid Molar Ratio, Temperature and Catalyst Concentration

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خلاصه مقاله:

Oleamide is amide derivative of oleic acid that is frequently used as slip agent in polymer industry. The present study explores the kinetic of oleamide synthesis by ammonolysis reaction between oleic acid and urea instead of ammonia gas at atmospheric pressure in the presence of $AlCl_3$ catalyst. The effect of oleic acid : urea molar ratio, temperature and catalyst concentration on the reaction kinetic was investigated and reaction rate constants were calculated. At low molar ratio of oleic acid:urea (i.e. up to 1:2), the reaction followed an overall second order kinetic and at higher molar ratio (i.e. 1:4 and 1:5), the pseudo first order dependence of rate respect to oleic acid was dominant at three examined temperatures and catalyst concentrations. The values of rate constant were increased by increasing the temperature and urea as well as $AlCl_3$ concentration in which the highest amount was attributed to the operational condition of oleic acid: urea molar ratio of 1:4, temperature of $200^\circ C$ and $AlCl_3$ catalyst concentration of 1 wt% that was selected as optimum condition for oleamide synthesis.

کلمات کلیدی:

oleamide, Synthesis, kinetic, urea, catalyst

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