

A kinetic study of the 1,3-dipolar cycloaddition reaction between N-p-methoxybenzyliden- α -phenylglycine methyl ester and nitrosobenzene

Zanocco,

Marquez,

Rodriguezc,

The kinetics of the reaction between N-p-methoxybenzyliden- α -phenylglycine methyl ester and nitrosobenzene, using benzene as the solvent and both acetic and chloroacetic acid as catalysts, was studied by means of UV-VIS spectroscopy. The results obtained show clearly that the product formation rate is determined by the formation of the imine 1,3-dipole, a process that is catalyzed by Brönsted acids. From kinetic experiments it was found that the reaction rate is independent of nitrobenzene concentration and first order in imine and monomeric carboxylic acid concentrations. Catalytic rate constants take the values 8.9×10^3 and $48.2 \times 10^3 \text{ M}^{-1} \text{ s}^{-1}$ when acetic and chloroacetic acids, respectively, are used as the catalyst. Kinetic and $^1\text{H-NMR}$ studies provide evidence that the catalysis occurs through a bifunctional catalytic mechanism.