World Academy of Science, Engineering and Technology
International Journal of Chemical and Molecular Engineering
Vol:14, No:12, 2020

Elucidation of the Photoreactivity of 2-Hydroxychalcones and the Effect of Continuous Photoflow Method on the Photoreactivity

Authors : Sobiya George, Anna Dora Gudmundsdottir

Abstract : The 2-hydroxychalcones form an important group of organic compounds not only because of their pharmacological properties but also because they are intermediates in the biosynthesis of flavanones. We studied the photoreactivity of 2-hydroxychalcone derivatives in aprotic solvent acetonitrile and found that their photochemistry is concentration-dependent. Irradiation of 2-hydroxychalcone derivatives with 365 nm light emitting diode (LED) in dilute concentration selectively forms flavanones, whereas, at higher concentrations, an additional photoproduct is observed. However, the application of the continuous photo-flow method resulted in the selective formation of flavanones even at higher concentrations. To understand the reaction mechanism and explain the concentration-dependent photoreactivity of 2-hydroxychalcones, we preformed trapping studies with tris(trimethylsilyl)silane, nanosecond laser flash photolysis, and time dependent-density functional theory (TD-DFT) calculations.

Keywords : flavanones, hydroxychalcones, laser flash photolysis, TD-DFT calculations
Conference Title : ICIPR 2020 : International Conference on Industrial Photochemistry and Research
Conference Location : London, United Kingdom
Conference Dates : December 10-11, 2020