

A facile green chemistry approaches towards the synthesis of bis-Schiff bases using ultrasound versus microwave and conventional method without catalyst

Abstract

A sonochemistry-based method was used to synthesize a novel series of bis-Schiff bases using aromatic aldehydes and diamines (trans-1, 4-diaminocyclohexane, p-xylylenediamine and ethylenediamine dihydrochloride) without catalyst. Yields and reaction times needed for reaction completion using conventional heating, microwave (MW) and ultrasound (US) irradiation are compared. The environmentally friendly sonochemical waves, in the presence of electron withdrawing and electron donating groups, afford the desired products in high yields and short time. The structures of the products were proven by elemental analyses, IR, MS, ¹H, ¹⁹F, and ¹³C NMR spectroscopy. ¹H NMR spectral data revealed that some derivatives have stronger intramolecular hydrogen bonding than others.