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Supersonic conditions with an effective Ni – chitosan Nano-catalyst

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A heterogeneous and magnetically recyclable Ni–chitosan Nano catalyst was synthesized and characterised using powder Fourier-transform infrared (FTIR) spectroscopy, X-ray diffraction (XRD) analysis, scanning electron microscopy (SEM), high-resolution transmission electron microscopy (HRTEM), and energy-dispersive X-ray (EDX) spectroscopy, among other techniques. Under ultrasonic irradiation, it was successfully used in the environmentally friendly synthesis of novel C5–C6-unsubstituted 1,4-DHPs. The methodology's main goal was to provide an ecologically friendly protocol with a rapid response time and a straightforward reaction technique. Other benefits of this approach include a broad substrate range, high product yield, use of an environmentally benign solvent and recyclable Nano catalyst, and reaction at ambient temperature [1-3].

Ultrasonic irradiation is a key technology in the green chemistry toolkit. Son chemistry is the use of ultrasound in "conventional" reactions to provide a faster reaction time, higher conversion, and easier methodology. Ultra sonication is a new trend in synthetic chemistry that helps to achieve green chemistry's goal of reducing chemical synthesis's environmental impact. By increasing the homogeneity of the reaction medium, ultrasonic irradiation provides for optimal mixing of the reactants and catalyst. It also reduces the possibility of agglomeration of heterogeneous nanoparticles (NPs) and, as a result, increases the catalyst's dispersibility across the medium, resulting in higher catalytic activity [4,5].

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