
Synthesis of Tetrahydro-4H-chromenes Using Nano γ-Fe_2O_3 in H_2O

**Significance:** γ-Fe_2O_3 magnetic nanoparticles (nano-γ-Fe_2O_3), which were dispersed by ultrasonic irradiation in water, catalyzed the three-component condensation reaction of 1,3-cyclohexanediones, arylaldehydes, and malononitrile to give the corresponding tetrahydro-4H-chromenes in up to 95% yield (14 examples, eq. 1). The dispersed nano-γ-Fe_2O_3 was also effective for the four-component reaction of dimeredone, arylaldehydes, β-keto esters, and NH_4OAc to afford the corresponding hexahydroquinoline carboxylates in up to 96% yield (8 examples, eq. 2).

**Comment:** The catalytic activity of the dispersed nano-γ-Fe_2O_3 was superior to that of FeCl_3, Fe(NO_3)_3, bulk-Fe_3O_4, nano-Fe_3O_4 and non-dispersed nano-γ-Fe_2O_3. In the formation of tetrahydro-4H-chromenes, the catalyst was recovered magnetically and reused four times.