

ESI**Magnetic nanoparticle-supported glutathione: a conceptually sustainable organocatalyst**

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Table 1. Optimization of reaction conditions.^a

No.	Solvent	R. temp. (°C)	R. time (min)	Conversion (%)
1	Toluene	120	30	>5
2	Toluene	140	30	>5
3	Toluene + H ₂ O	140	30	80
4	H ₂ O	120	30	70
5	H ₂ O	140	20	92
6	H ₂ O	140	30	95

^a Reactions were carried out with 1 mmol of benzyl amine, 25 mg of nano-FGT.

Experimental Section**Anchoring of glutathione on nano-ferrite surfaces:**

Nano-Fe₃O₄ (0.5 gm) was dispersed in 15 mL water and 5 mL of methanol and sonicated for 15 min.

Glutathione (reduced form) (0.4 gm) dissolved in 5 mL of water was added to this solution and again sonicated for 2 h. The glutathione-functionalized nanomaterial (nano-organocatalyst) was then isolated by centrifugation, washed with water and methanol, and dried under vacuum at 50 to 60 °C, Yield = 76 %.

Paal-Knorr reaction of amines using nano-organocatalyst:

The amines (1 mmol), tetrahydro-2,5-dimethoxyfuran (1.1 mmol) and nano-organocatalyst (25 mg) were placed in a 10 mL crimp-sealed thick-walled glass tube equipped with a pressure sensor and a magnetic stirrer. Water (2 mL) was added and the reaction mixture was mixed thoroughly. The reaction tube was then placed inside the cavity of a CEM Discover focused MW synthesis system, operated at 140 ± 5 °C (temperature monitored by a built-in infrared sensor), power 50 to 250 Watt, and pressure 50 to 180 psi for 20 minutes (Table 2). After completion of the reaction, the phase separation of the desired product from the aqueous medium occurred, facilitating the isolation of crude product by simple decantation, which was further purified by simply passing through short silica column and fully characterized by NMR and MS spectroscopy.

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