

Robust Cobalt Catalysts for the Hydrogenation of Nitriles

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Cobalt is frequently applied in a variety of catalytic redox-transformation owing to its decent abundance and relatively low price. In this context, the hydrogenation of nitriles adopts a privileged position since the corresponding reaction products, *i.e.* primary amines represent pivotal precursors to indispensable commodities as well as specialty chemicals. Typically, the title reaction is accomplished through the use of soluble molecularly well-defined complexes or highly reactive bulk metal catalysts such as Rieke and Raney cobalt [1-3]. The major drawback of these catalysts is that the synthesis and manipulation requires working in inert gas-filled glove box systems by virtue of their intrinsic oxygen sensitivity. This fact renders the overall chemical transformation for preparing the desired amines *via* catalysis a tedious process. Herein, a facile method for the *in situ* cementation of active cobalt particles that effect the pertinent hydrogenation is described. Furthermore, the pyrolytic synthesis of a composite material obtained from a cobalt corrole is presented. Both catalytic protocols dispense with the need of a special containment system and the reaction setups are easily assembled under an ordinary laboratory atmosphere. The respective catalysts are readily separated from the reaction mixture and the amines are isolated as their hydrochloride salts without the use of time-consuming column chromatography upon simple precipitation from the reaction solution with etheric HCl.

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[3] Banwell, M. G.; Jones, M. T.; Reekie, T. A.; Schwartz, B. D.; Tan, S. H.; White, L. V. RANEY® cobalt – an underutilized reagent for the selective cleavage of C–X and N–O bonds. *Org. Biomol. Chem.* **2014**, *12*, 7433-7444.