Manganese(III) Porphyrin-Catalyzed Dehydrogenation of Alcohols to form Imines, Tertiary Amines and Quinolines

Manganese(III) porphyrin chloride complexes have been developed for the first time as catalysts for the acceptorless dehydrogenative coupling of alcohols and amines. The reaction has been applied to the direct synthesis of imines, tertiary amines and quinolines where only hydrogen gas and/or water are formed as the byproduct(s). The mechanism is believed to involve the formation of a manganese(III) alkoxide complex which degrades into the aldehyde and a manganese(III) hydride species. The latter reacts with the alcohol to form hydrogen gas and thereby regenerates the alkoxide complex.

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