



Sekce chemie PŘF UK v Praze
zve všechny zájemce na přednášku z cyklu

Quo Vadis Chemie

Indium Mediated Reactions and Their Applications

kterou přednese



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Abstrakt: The reductive capability of the $\text{InCl}_3/\text{NaBH}_4$ system significantly depended on the solvent used. Exploration of the $\text{InCl}_3/\text{NaBH}_4$ system in THF and CH_3CN by ^{11}B NMR spectroscopy revealed two different boron by-products. A variety of aromatic, heteroaromatic and aliphatic nitriles were reduced to their corresponding primary amine. The system was able to reduce nitriles in the presence aromatic halides, methoxy groups and in the presence of heteroaromatic rings, such as thiophene. Binary metal hydride systems composed of dichloroindium hydride (HInCl_2) and an additional hydride, such as boranetetrahydrofuran ($\text{BH}_3:\text{THF}$) or diisobutylaluminum hydride (DIBAL-H.) can reduce carbon-halogen bonds as well as an electrophilic group, such as a nitrile, ester, or carboxylic acid.

A simple, efficient, and general method for the indium-mediated enantioselective allylation and propargylation of aromatic and aliphatic aldehydes under Barbier-type conditions in a one-pot synthesis affording the corresponding chiral alcohol products in very good yield (up to 90%) and enantiomeric excess (up to 95%) can be carried out as well.

