## Category

Metal-Mediated Synthesis

## Key words

zirconocenes lanthanides metallacycles



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Reduction of Cp<sub>2</sub>ZrCl<sub>2</sub> with Mischmetall: A New Method for Generating an Efficient "Cp<sub>2</sub>Zr" Equivalent *Org. Lett.* **2006**, *8*, 2945-2947.

## Cp<sub>2</sub>ZrCl<sub>2</sub>-Mischmetall as a New 'Cp<sub>2</sub>Zr' Equivalent

**Significance:** This work describes a simple and practical preparation of well-known 'Cp<sub>2</sub>Zr' species, which have been applied to a large variety of useful synthetic transformations. Mischmetall is a cheap, easy-to-handle and selective reducing agent. The reactions proceed smoothly at ambient temperature. The mild nature of the reducing agent allowed performing of previously unknown reactions of terminal alkynes with zirconocenes. Also, novel intramolecular reactions of ene- and yne-imines became possible using this elegant method.

**Comment:** Mischmetall is an alloy of light lanthanides, containing mostly La, Ce and Nd (more than 95% altogether). From these metals, only La and Ce were found to be efficient in the reduction of Cp<sub>2</sub>ZrCl<sub>2</sub>. Mischmetall is usually inert towards most functionalities, which makes it a potentially very useful reducing agent, if an appropriate coreductant can be found for a given reaction. This material, however, is pyrophoric and its fine particles oxidize very fast in air. Before use, it should be powdered with a rasp under Ar.

**Review:** For a review on the synthetic utility of mischmetall, see: M.-I. Lannou, F. Hélion, J.-L. Namy *Tetrahedron* **2003**, *5*9, 10551-10565.

**SYNFACTS Contributors:** Paul Knochel, Andrei Gavryushin Synfacts 2006, 9, 0940-0940 Published online: 23.08.2006 **DOI:** 10.1055/s-2006-949210; **Reg-No.:** P08106SF