J. V. OBLIGACION, J. M. NEELY, A. N. YAZDANI, I. PAPPAS, P. J. CHIRIK* (PRINCETON UNIVERSITY, USA)
Cobalt Catalyzed Z-Selective Hydroboration of Terminal Alkynes and Elucidation of the Origin of Selectivity
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Cobalt-Catalyzed Hydroboration of Alkynes

Category

Metal-Mediated
Synthesis

Key words

cobalt

hydroboration

alkynes

Synfact
of the month

Proposed mechanism:

Selected examples:

76% yield
Z/E = 92:8

72% yield
Z/E = 98:2

79% yield
Z/E = 97:3

59% yield
Z/E = 92:8

50% yield
Z/E = 97:3

56% yield
Z/E = 56:44

76% yield
Z/E = 95:5

69% yield
Z/E > 98:2

Significance: Chirik and co-workers report a bis(imino)pyridine cobalt-catalyzed hydroboration of terminal alkynes using HBpin to afford various vinylboronate esters with high Z-selectivity.

Comment: Selective insertion of an alkynylboronate ester into a Co–H bond via *syn*-hydrometalation generates a pro-(Z) cobalt alkenyl intermediate to yield the corresponding (Z)-vinylboronate ester.

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