

Formation of C-C Bonds via Catalytic Hydrogenation and Transfer Hydrogenation

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Reductive C-C bond formation *via* catalytic hydrogenation and related H₂-auto-transfer processes for the direct conversion of lower alcohols to higher alcohols are described. These transformations merge redox and C-C bond construction events, bypassing stoichiometric use of premetalated reagents. Due to a kinetic preference for primary alcohol dehydrogenation, site-selective modification of glycols and higher polyols occurs in the absence of protecting groups. To benchmark the utility of these methods, total syntheses of several iconic type I polyketide natural products were undertaken, in each case, availing routes significantly more concise than previously achieved.

