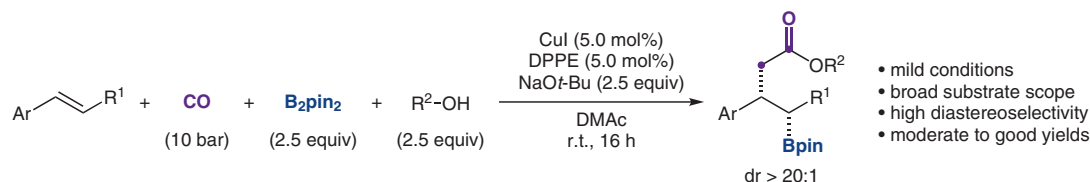


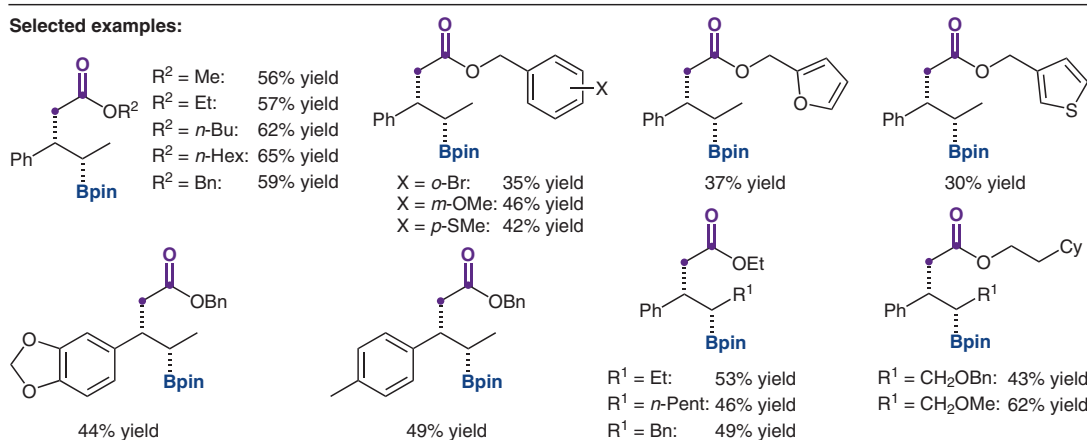
F.-P. WU, Y. YANG, D. P. FUENTES, X.-F. WU\* (LEIBNIZ-INSTITUT FÜR KATALYSE E.V., ROSTOCK, GERMANY AND DALIAN INSTITUTE OF CHEMICAL PHYSICS, LIAONING, P. R. OF CHINA)

Copper-Catalyzed Carbonylative Catenation of Olefins: Direct Synthesis of  $\gamma$ -Boryl Esters  
*Chem* 2022, DOI: 10.1016/j.chempr.2022.03.013.

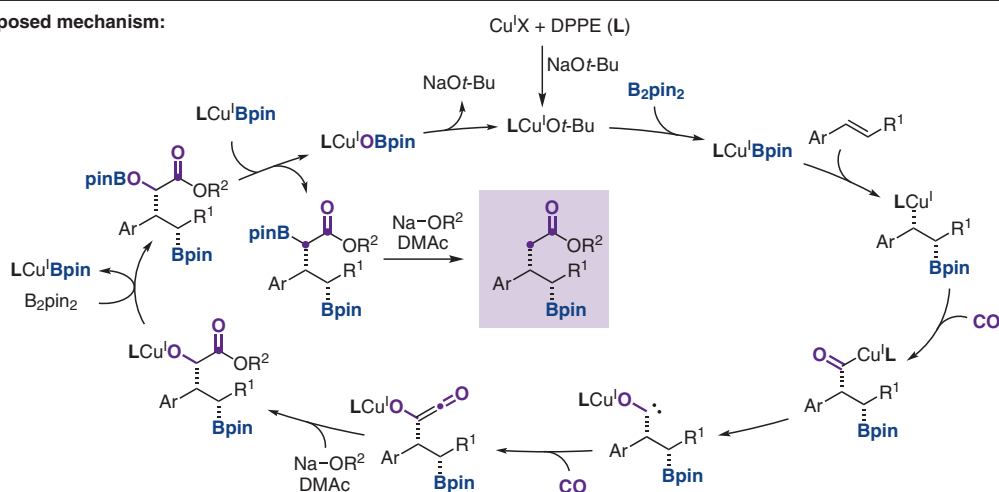
## Take Two CO: Access to $\gamma$ -Boryl Esters by Boration and Carbonylative Catenation of Styrenes in One Pot



### Selected examples:



### Proposed mechanism:



**Significance:** A copper-catalyzed carbonylative four-component coupling of olefins to access  $\gamma$ -boryl esters is disclosed. Two CO molecules act as the  $-\text{CH}_2\text{CO}-$  source. The regio- and *syn*-selective boryl cupration gives the products in high stereoselectivity.

**Comment:** Based on <sup>13</sup>C and <sup>2</sup>H NMR labeling experiments, the shown mechanism is proposed. Further synthetic transformations of the  $\gamma$ -boryl esters were performed to demonstrate the synthetic utility of this protocol.

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