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Stereoselective C–H Borylations of Cyclopropanes and Cyclobutanes with Silica-Supported Monophosphane–Ir Catalysts

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C–H Borylation of Cyclopropanes and Cyclobutanes with Silica-SMAP–Iridium

Significance: The heteroatom-directed C–H borylation of cyclopropanes and cyclobutanes with bis(pinacolato)diboron was carried out in the presence of $[\text{Ir}(\text{OMe})(\text{cod})]_2$ and silica-SMAP to give the corresponding borylated products in up to 168% yield based on bis(pinacolato)diboron (eqs. 1 and 2).

Comment: In the reaction of 2-cyclopropylpyridine with bis(pinacolato)diboron, the catalytic activity of the silica-SMAP–iridium system was superior to that of the other ligand–iridium systems (for example, 0% yield for Ph-SMAP–Ir, Me_3P –Ir, $t\text{-Bu}_3\text{P}$ –Ir, Ph_3P –Ir, XPhos–Ir, dtbpy–Ir, and 2,9-Me₂Phen–Ir).

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