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Aromatic Homologation by Non-Chelate-Assisted RhIII-Catalyzed C–H Functionalization of Arenes with Alkynes

Extending Arenes via C–H Activation with Rhodium

Selected examples:

\[
\begin{align*}
\text{R}^1 & \quad \text{R}^2 \\
80\% \text{ yield} & \quad 63\% \text{ yield} & \quad 44\% \text{ yield} \\
48\% \text{ yield} & \quad 51\% \text{ yield} & \quad 40\% \text{ yield} \\
60\% \text{ yield} & \quad 65\% \text{ yield} & \quad 57\% \text{ yield}
\end{align*}
\]

**Significance:** Extending the conjugation length of arenes is of great interest to the materials chemistry community due to the impartation of new electrical and photophysical properties. The previously reported method for rhodium-catalyzed arene homologation was achieved with a boronic acid functionalized substrates (J. Org. Chem. 2011, 76, 2867); in contrast, Pham and Cramer report a C–H functionalization to achieve the same transformation.

**Comment:** While dibutyl alkynes were used most prominently in this paper, the authors were also able to demonstrate that other alkynes, including those bearing aryl groups, could be incorporated. A proposed mechanism for the transformation is included in the paper.