Graphene Oxide Promoted C–H Arylation of Benzene with Aryl Halides

Results:

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\begin{align*}
\text{X = I, 88% GC yield} & \quad \text{X = Br, 8% GC yield} \\
\text{X = I, 82% GC yield} & \quad \text{X = Br, 3% GC yield} \\
\text{X = I, 81% GC yield} & \quad \text{X = Cl, 0% GC yield} \\
\text{X = I, 72% GC yield} & \\
\end{align*}
\]

Significance: Graphene oxide promoted the C–H arylation of benzene with aryl halides in the presence of t-BuOK to give the corresponding biaryls in ≤92% GC yield (15 examples).

Comment: The graphene oxide was characterized by TEM, AFM, Raman spectroscopy, XPS, SEM, and BET analyses. In the reaction of benzene with 4-iodoanisole, the catalytic activity of graphene oxide was superior to that of the other carbon materials (carbon nanotubes: 19% GC yield, active carbon: 11%, carbon black: 19%, natural graphite: 8%).