C–H Arylation with Platinum

**Significance:** C–H activation in aryl systems finds broad applicability in the construction of conjugated organic materials. This paper reports the use of a platinum catalyst to couple aryl groups pendant on hypervalent iodine to simple arenes via a C–H activation pathway.

**Comment:** The authors have previously reported a similar process using a palladium catalyst (ACS Catal. 2011, 1, 170). However, with the exception of some examples in which the reaction resulted in mixed isomers, the use of a platinum catalyst produced materials with different selectivity than the palladium catalyst, providing two processes with complementary reactivity.

**Proposed mechanism:**

\[
\text{Na}_2\text{PtCl}_4 (2.5–5 \text{ mol}) \\
\text{TFA or AcOH (0–32 equiv)} \\
\text{Bu}_4\text{N}\text{OTf (5 equiv)} \\
100–120 ^\circ\text{C}, 72 \text{ h}
\]

Selected examples:

- \(\text{Ar}_2\text{I}[\text{TFA}^+]\text{Na}_2\text{PtCl}_4\) (2.5–5 mol%)
- TFA or AcOH (0–32 equiv)
- \(\text{Bu}_4\text{N}\text{OTf (5 equiv)}\)
- 100–120 °C, 72 h

\[
\text{Ar} + \text{[Ar}_2\text{I]}^+ \rightarrow \text{[Cl}_4\text{PtIVAr]}^2^–\text{[Cl}_4\text{XPtIVAr]}^2^–
\]

- MeO Ph
  - 83% yield
  - \(m/p = 6:1\)

- Cl
  - 48% yield
  - \(m/p = 1.4:1\)

- \(p\)-MeOC₆H₄
  - 66% yield
  - \(m/p = 2.5:1\)

- \(p\)-MeOC₆H₄
  - 52% yield
  - \(m/p = 6:1\)

- \(p\)-MeOC₆H₄
  - 53% yield
  - \(m/p = 1:1\)

- \(p\)-MeOC₆H₄
  - 58% yield
  - \(m/p = 2.5:1\)

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