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.

**Selected examples:**

- MeO
  - MeO
  - 83% yield
  - m/p = 6:1
- MeO
  - MeO
  - 48% yield
  - m/p = 1.4:1
- Cl
  - p-MeOC₆H₄
  - 66% yield
  - m/p = 2.5:1
- F
  - p-MeOC₆H₄
  - 52% yield
  - m/p = 6:1
- F
  - p-MeOC₆H₄
  - 53% yield
  - m/p = 2.5:1
- Br
  - p-MeOC₆H₄
  - 58% yield
  - m/p = 2.5:1

**Proposed mechanism:**

\[
\text{[Cl}_4\text{Pt}^{II}]^{2-} \xrightarrow{\text{ArI}} [\text{Cl}_4\text{Pt}^{IV}\text{Ar}]^{2-} \xrightarrow{\text{HX}} \text{[Cl}_4\text{XP}^{IV}\text{Ar}]^{2-} \xrightarrow{\text{Y}} \text{[Cl}_4\text{XP}^{IV}\text{Ar}]^{2-} \xrightarrow{\text{ArI}} \text{[Cl}_4\text{Pt}^{II}]^{2-}
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