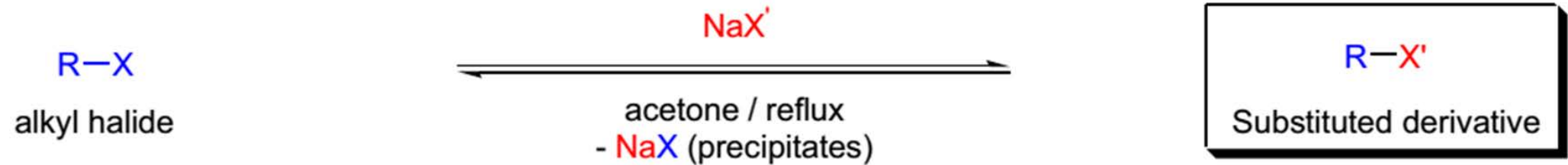


# Aromatic Finkelstein Reaction

Ming-Liang Lou

7/21/2015

# Finkelstein Reaction



$X = \text{Cl, Br, OMs, OTs}$ ;  $R = 1^\circ \text{ and } 2^\circ \text{ alkyl, allyl, benzyl}$ ; when  $X = \text{Cl}$  then  $X' = \text{Br or I}$ ; when  $X = \text{Br}$  then  $X' = \text{I}$

Vinyl, aryl and tertiary alkyl halides are unreactive.

**J|A|C|S**

COMMUNICATIONS

Published on Web 11/20/2002

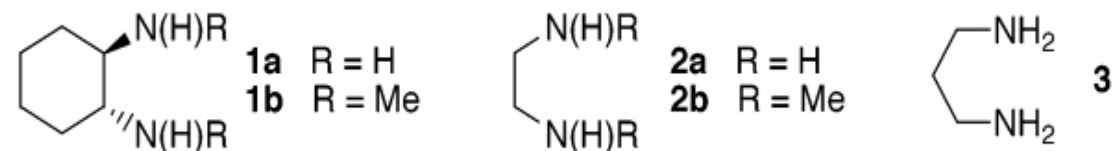
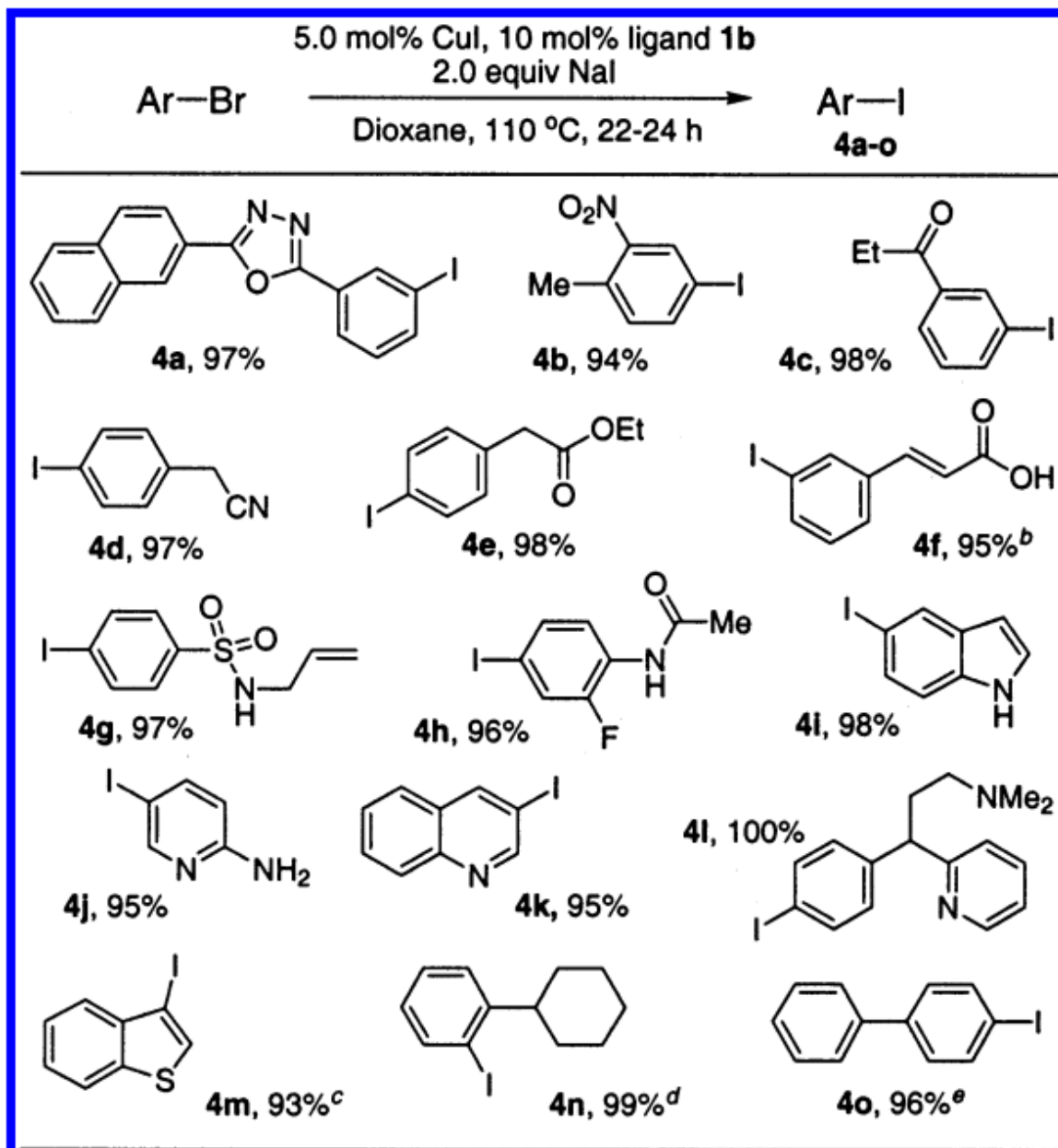
**Copper-Catalyzed Halogen Exchange in Aryl Halides: An Aromatic Finkelstein Reaction**

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Received October 8, 2002

Table 1. The Scope of the Copper-Catalyzed Conversion of Aryl Bromides into Aryl Iodides<sup>a</sup>



a Isolated yields (average of two runs); >95% purity as determined by GC and <sup>1</sup>H NMR.

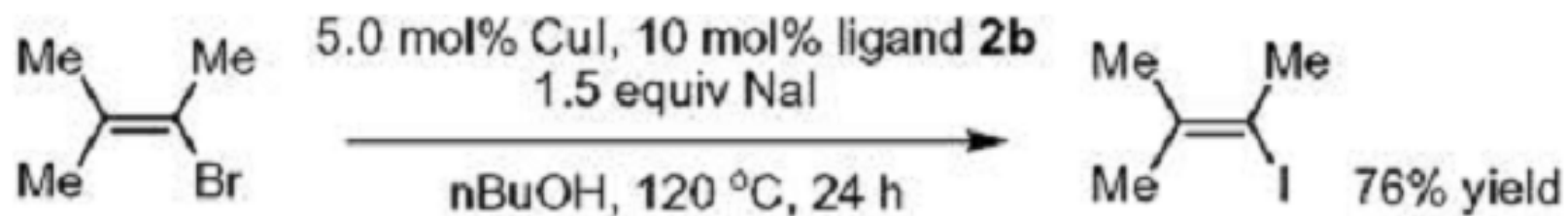
b With 1.0 equiv of hexamethyldisilazane.

c Performed in 4:1 m-xylene/diglyme solvent mixture at 130 °C for 22 h.

d Performed in n-pentanol at 130 °C for 40 h.

e With 10 mol % of ligand **3** in n-pentanol at 130 °C for 22 h.

This method can also be extended to halogen exchange in vinyl halides



# Photo-induced Metal-Catalyst-Free Aromatic Finkelstein Reaction

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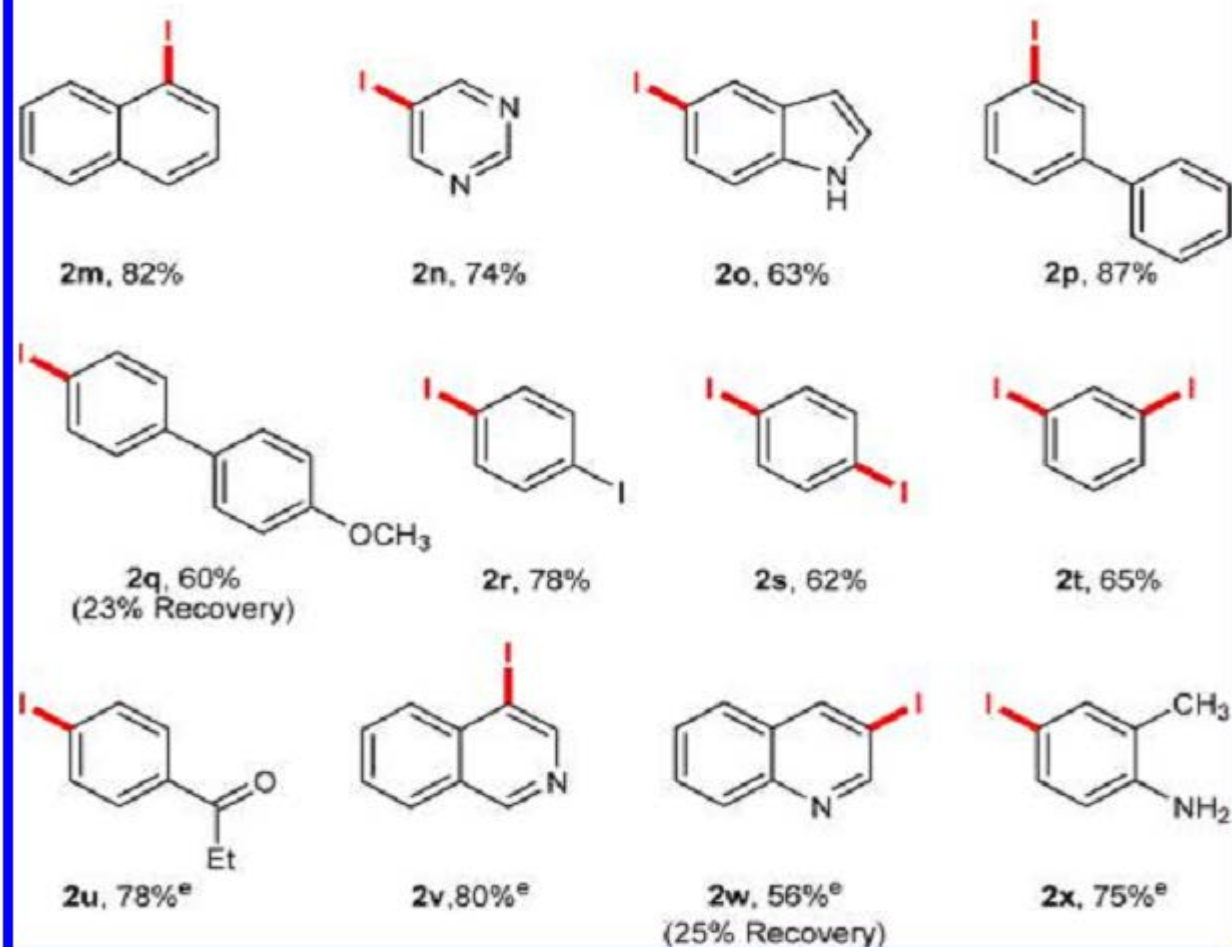
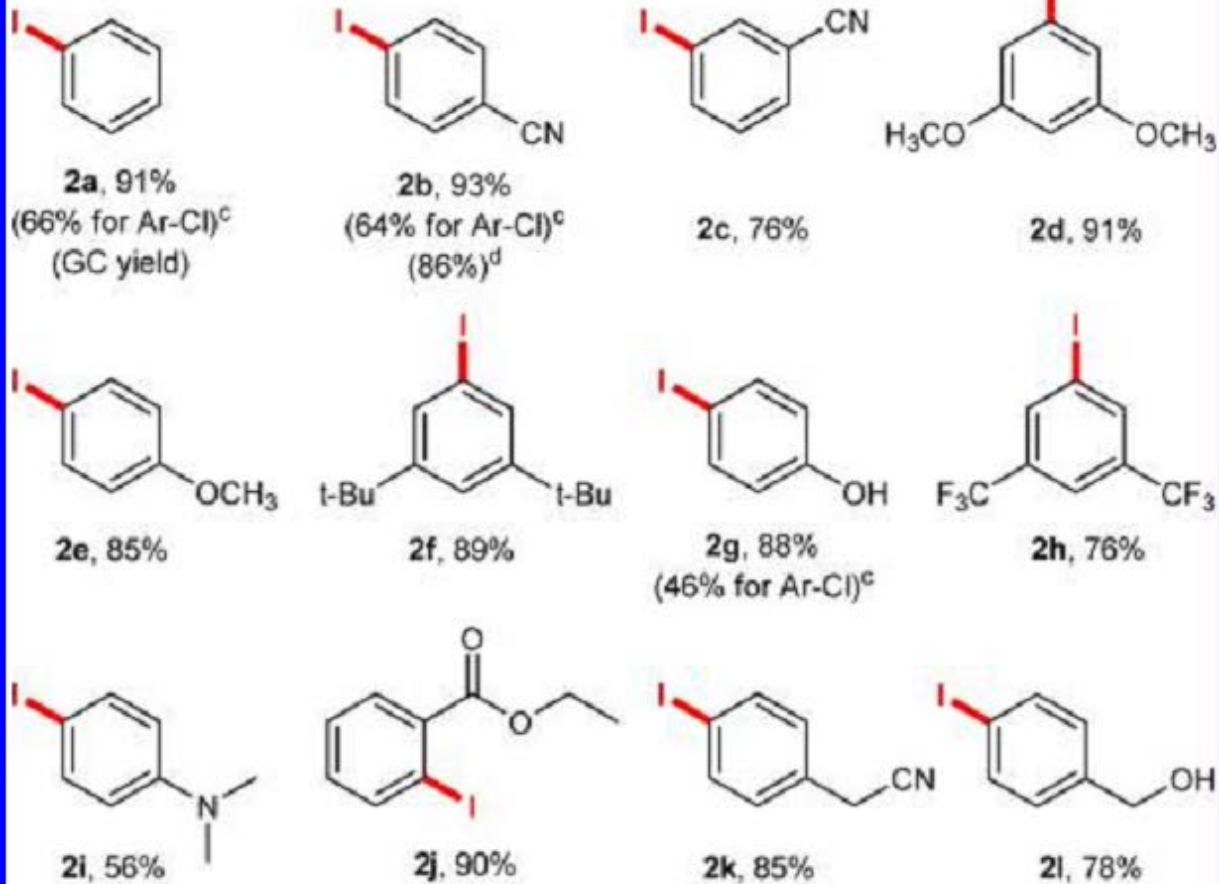
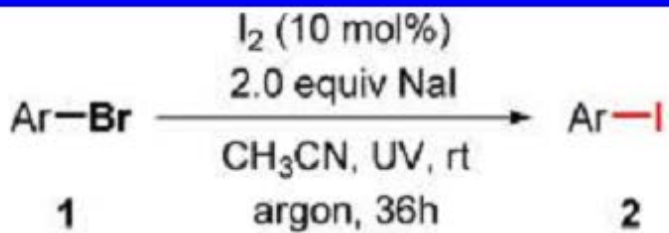
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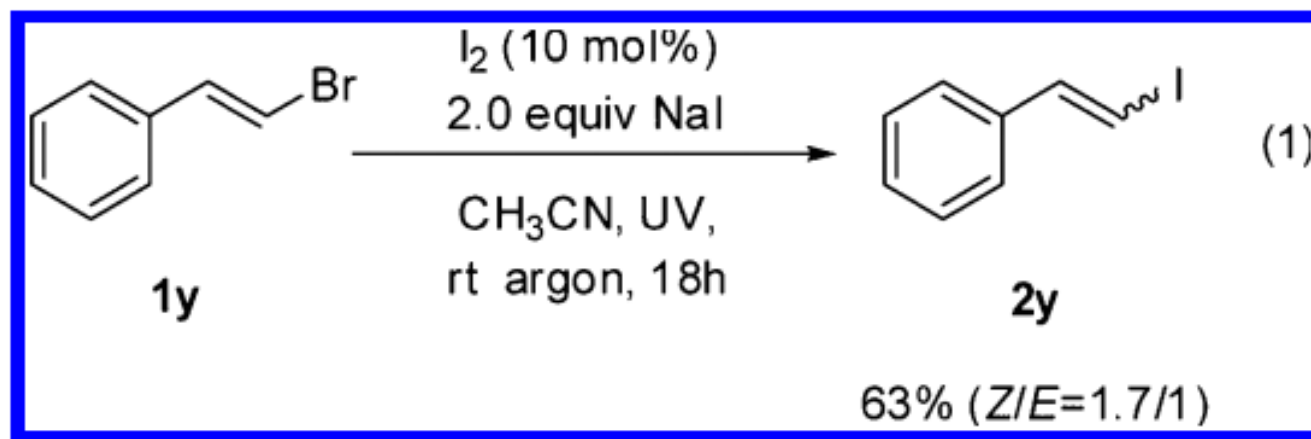
**Published:** June 18, 2015

# Iodination of Various Aryl Bromides and Chlorides<sup>a,b</sup>



<sup>a</sup>Reaction conditions: aryl bromide **1** (0.1 mmol), NaI (0.2 mmol), I<sub>2</sub> (0.01 mmol), and CH<sub>3</sub>CN (0.5 mL) at 20 °C in argon under UV light for 36 h. <sup>b</sup>Yield of isolated product is given. <sup>c</sup>Iodination of aryl chlorides to the corresponding iodides. <sup>d</sup>Gram scale reaction (6 mmol). <sup>e</sup>Performed in 1.5 mL of CH<sub>3</sub>CN.

The photo-driven strategy could be extended to halogen exchange in vinyl bromides





# Proposed mechanism

