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Fast, Efficient and High-Yielding Routes to Diaryliodonium Salts

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Diaryliodonium salts belong to the class of hypervalent iodine compounds. Their use in organic synthesis has recently gained considerable attention, as their properties resemble those of organometallic complexes with Hg, Pb and Pd. Due to their highly electron-deficient nature and hyperleaving group ability, they serve as versatile arylating agents with a variety of nucleophiles, e.g. in α -arylation of carbonyl compounds. They are often applied in metal-catalyzed cross-coupling reactions,[1] allowing milder reaction conditions than in couplings with aryl halides.

The lack of efficient synthetic routes towards diaryliodonium salts has clearly limited their scope as reagents in organic chemistry. We have recently developed three one-pot syntheses of diaryliodonium triflates,[2] tosylates[3] and tetrafluoroborates[4], respectively (Figure 1). These routes nicely compliment each other, and give access to a large variety of symmetric and unsymmetric salts with various functional groups. Both electron deficient and electron rich salts can be synthesized using these fast, high yielding, and operationally simple protocols.

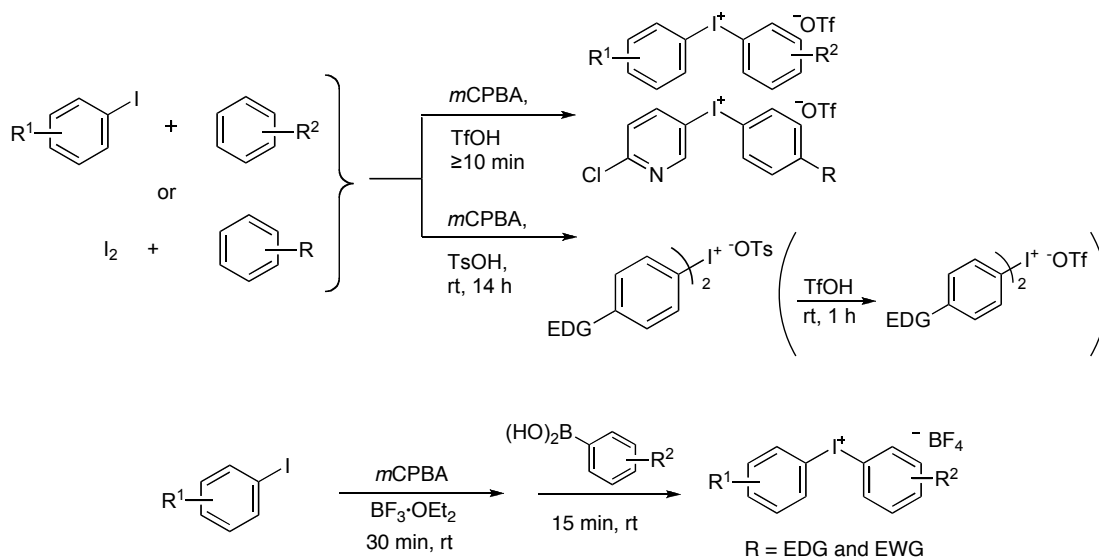


Figure 1. Efficient routes to diaryliodonium salts.

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