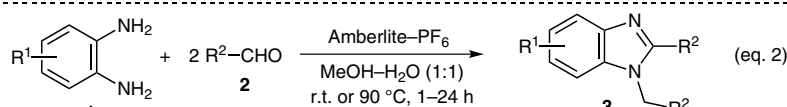
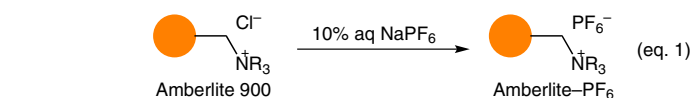
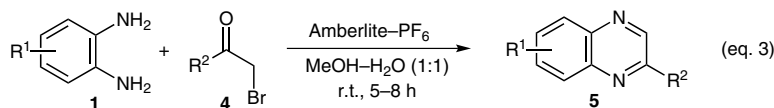
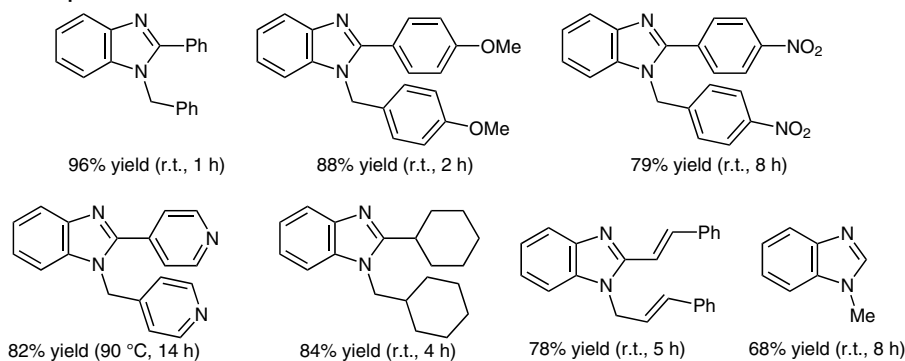


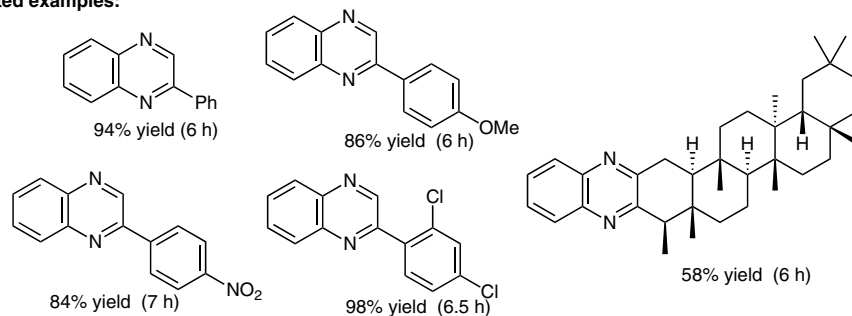
# Annulation Reactions Catalyzed by Amberlite-Bound Hexafluorophosphate



Selected examples:



Selected examples:



**Significance:** Amberlite resin-bound hexafluorophosphate (Amberlite-PF<sub>6</sub>) was prepared by treatment of Amberlite 900 with aqueous NaPF<sub>6</sub> (eq. 1). In the presence of Amberlite-PF<sub>6</sub>, the annulation of phenylenediamines **1** with aldehydes **2** took place to give the corresponding benzimidazoles **3** (25 examples, 72–96% yield).

**Comment:** The binding of hexafluorophosphate on Amberlite resin was confirmed by IR spectra (557 and 832 cm<sup>-1</sup>), though other characterizations were not given. Phenylenediamines **1** also reacted with  $\alpha$ -bromoketones **4** in the presence of Amberlite-PF<sub>6</sub> to give the corresponding quinoxalines **5** via an aromatization step.

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