D. P. HARI, P. SCHROLL, B. KÖNIG* (UNIVERSITÄT REGENSBURG, GERMANY)
Metal-Free, Visible-Light-Mediated Direct C–H Arylation of Heteroarenes with Aryl Diazonium Salts
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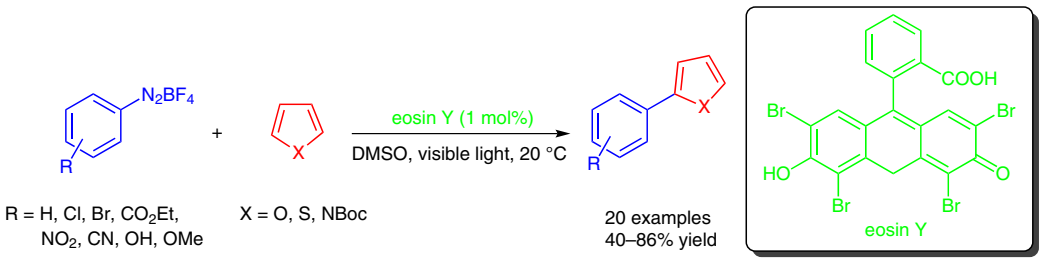
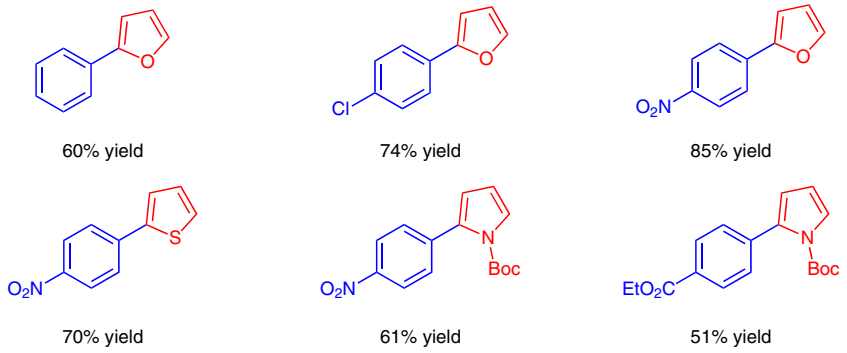
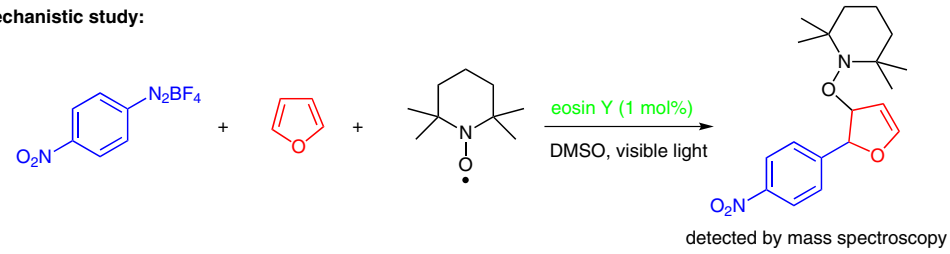
Eosin Y Promoted C–H Arylation of Heteroarenes with Aryl Diazonium Salts



Selected examples:



Mechanistic study:



Significance: König and co-workers have developed a metal-free, direct intermolecular C–H arylation of heteroarenes with aryl diazonium salts by photoredox catalysis with green light. The reaction proceeds smoothly at room temperature, does not require transition-metal catalysts or bases, and displays a broad scope toward diazonium salts and heterocycles with a wide range of functional group tolerance. A suggested radical mechanism has been proposed based on experimental observations and literature data.

Comment: Arylated heteroarenes are widely used in materials science because of their interesting optical and electronic properties, but also in biomedical applications as peptide mimetics or drugs. Herein, the authors report a metal-free, direct intermolecular C–H arylation of heteroarenes with aryl diazonium salts by photoredox catalysis with green light. This single-electron transfer cross-coupling represents an efficient alternative to known transition-metal-catalyzed methods and may find applications beyond synthesis, such as in the chemical patterning of surfaces.

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Category
Organo- and Biocatalysis

Key words
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C–H arylation
heteroarenes
aryl diazonium salts