

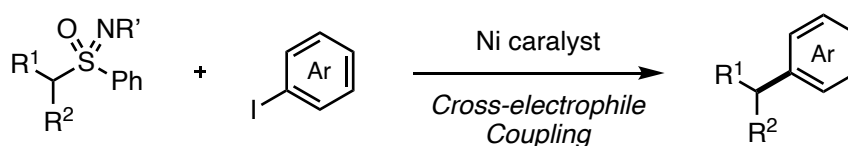
## Ni-catalyzed Cross-Electrophile Coupling of Alkyl Sulfoximines with Aryl Halides

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The transition-metal catalyzed cross-coupling reactions that can proceed efficient and selective C–C bond forming processes are versatile tools in organic synthesis. Generally, organometallic nucleophiles as coupling partners have been employed so far, however, these must be prepared from halides or pseudohalides, which limits their availability. Recently, cross-coupling using two different electrophiles, cross-electrophile coupling, has attracted much attention as a straightforward approach without preparation of organometallic reagents.<sup>1</sup> Our group has developed Pd- or Ni-catalyzed cross-coupling reactions using alkyl sulfones as new electrophiles through carbon–sulfonyl bond activation.<sup>2</sup> Inspired by recent progress of cross-electrophile coupling chemistry, we envisioned that alkyl sulfur compounds can be applied to cross-electrophile coupling.<sup>3</sup>

We will present that alkyl sulfoximine is an effective electrophile for cross-coupling with aryl halides by Ni catalysis. The substituent on nitrogen was found to be critical. Under optimized reaction condition, a variety of iodoarenes were reacted to give the corresponding products in good yields. Primary sulfoximines bearing various functional groups were applicable. And secondary alkyl sulfoximines afforded the coupling products. Reaction mechanism of the present cross-electrophile coupling was investigated by several control experiments and cyclic voltammetry.



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