

# SINGLE ELECTRON PROCESSES ENABLING ORGANIC SYNTHESIS



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Many organic reactions are mechanistically driven by two-electron processes.

Although such methods are highly effective for a vast number of transformations, there are still many such conversions that have proven challenging (e.g., cross-coupling of alkylmetallics) or that suffer from harsh reaction conditions or intolerance of sensitive functional groups. The limitations of such transformations are often inherent to the mechanism of these processes at the most fundamental level, and thus predispose many of these reactions for failure. Processes transpiring via single electron mechanistic paradigms have promise to resolve some of the aforementioned limitations. nDescribed will be our efforts to develop a suite of radical precursors for alkyl crosscoupling with a variety of electrophiles, emphasizing the tolerability of the developed conditions to an unprecedented array of functional groups. The value of generating radicals in a process that is synchronized and catalytic will be emphasized. Sequential transformations based on radical chemistry will be outlined, both in dual catalyzed processes and in radical/polar crossover processes where a subsequent catalytic transformation is not utilized. Finally, applications to DNA-encoded library synthesis will be presented.