

Transferring the photoredox catalytic conditions to organic electrocatalysis; electrogeneration of oxygen centered radicals from *N*-alkoxyphthalimides employing rapid alternating polarity

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The first electrogeneration of *O*-centered radicals from *N*-alkoxyphthalimides *via* rapid alternating polarity (RAP) electrolysis, using previous experimental conditions of photoredox catalysis (PRC) is reported. The electrochemical methodology emulates satisfactorily the redox cycle behavior accepted to explain the PRC technique. Notably, the contribution of oxidized Hantzsch ester produced during the anodic reaction is emphasized, which behaves as an efficient proton donor to facilitate *N*-*O* cleavage and to extinguish the radical sequence efficiently. The reaction is conducted in a practical way using an undivided cell fitted with glassy carbon electrodes, allowing the same reactions to occur on both electrodes during the overall transformation reaching a 77 % yield of the corresponding alcohol. This yield is higher than the electrochemical protocol using direct current electrolysis, confirming that the use of RAP electrolysis favors the proximity where the reactive intermediates are produced, facilitating their reaction to promote the desired reaction pathway.

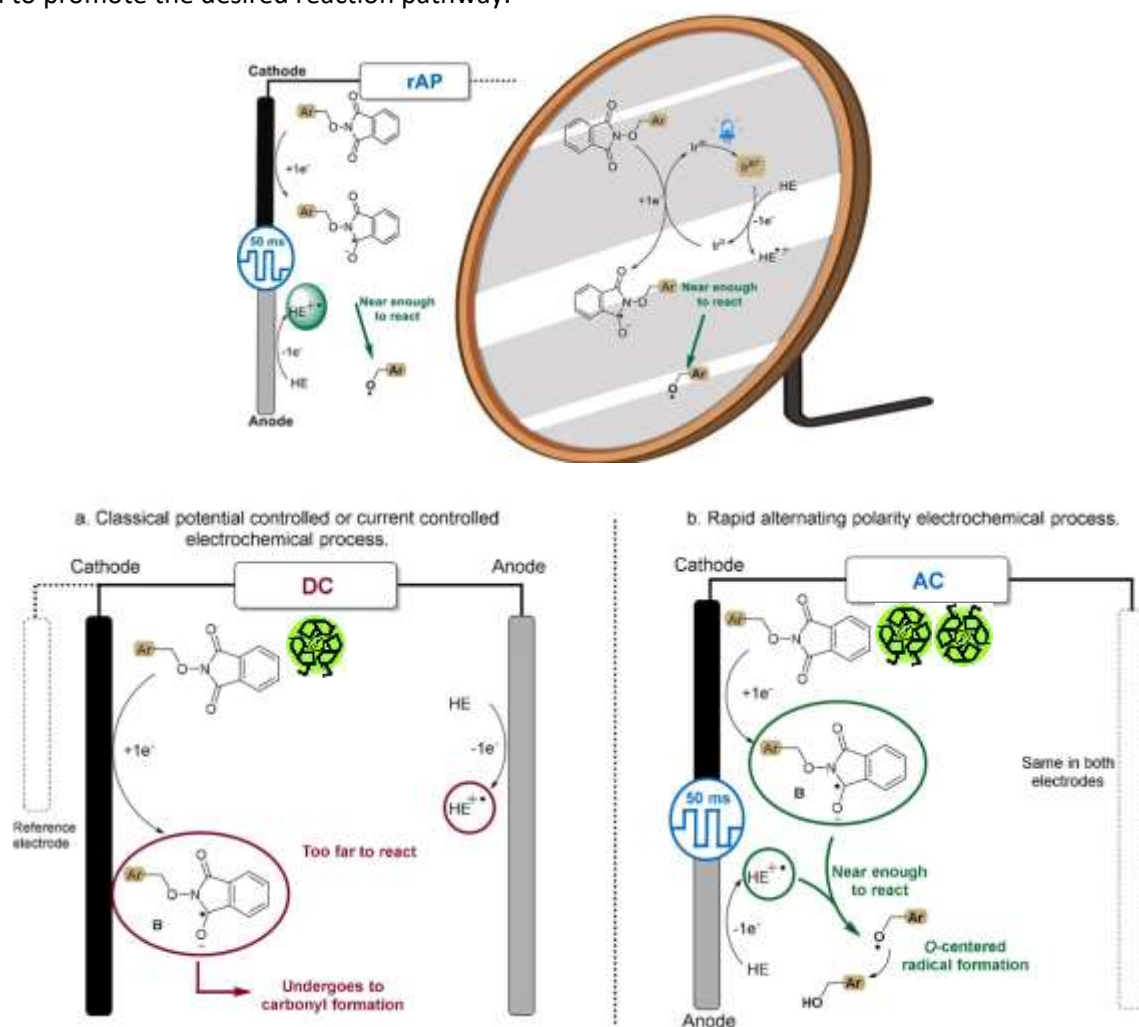


Figure 1. Comparison between a) Classical potential controlled or current controlled electrochemical process, and b) Rapid alternating potential (RAP) electrochemical process.

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References:

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