

Electrocatalysis: An emerging green and powerful strategy in synthetic organic chemistry

Goutam Brahmachari
Visva-Bharati University, India

Pioneering advances in green chemistry and engineering are directed towards a sustainable future that is highly demanding for our survival. The ultimate motto of the chemical fraternity is also thus extensively linked with this goal. Synthetic organic chemists are primarily concerned with chemical compounds/materials and their synthetic processes on which the material basis of a sustainable society is largely dependent. Hence, designing for chemical products and processes should follow principles that make them conducive to life.

As part of applying green tools, organic electrosynthesis has become influential in modern synthetic chemistry and finds practical applications in academia and industry due to low energy consumption, mildness, and environmental friendliness. Organic electrochemistry has led to a boom in new synthetic methodologies and their mechanistic understandings. Electrosynthesis has already led to several unprecedented methods. Much of the promise of such a technique hinges on their ability to achieve unique bond constructions that are not feasible using established protocols. Thus, synthetic chemists have been motivated to exploit electrosynthesis to develop efficient strategies for potential organic small molecules. Still, this spectacular field of research is growing in the scenario of global chemical research. As part of our ongoing research endeavours, we have also been deeply involved in green chemistry research during the last few years, focusing on designing and developing new approaches for biologically promising organic small molecules, including the exploration of electrochemical strategies in implementing a handful of organic transformations of interest. As part of our ongoing research endeavours, we have also been deeply involved in green chemistry research during the last few years, focusing on designing and developing new approaches for biologically promising organic small molecules, including the exploration of electrochemical strategies in implementing organic transformations of interest. In recent years, our group has already published a handful of such research articles in the frontline international journals of repute. The developed electrochemical strategies yielded several series of biorelevant organic molecules, particularly heterocyclic compounds, based on C-H functionalization. A few of our selected synthetic drives in the domain of electrosynthesis in accessing functionalized organic small molecules of biological promise, will be presented in the meeting.

Biography

Goutam Brahmachari is a full professor of organic chemistry at Visva-Bharati University, India. His main research activities include the development of new synthetic methodologies, green chemistry, and natural product chemistry. His group contributed significantly to developing effective and practical synthetic methods for carbon-carbon and carbon-heteroatom bond formation in constructing medicinally important heterocyclic scaffolds using C-H functionalization, cascade and cross-coupling approaches.

Received: September 30, 2024; **Accepted:** October 02, 2024; **Published:** December 14, 2024