Stirring-Free Scalable Electrosynthesis Enabled by Alternating Current

(No. T4-2268)

Principal investigator

Sergey Semenov

Faculty of Chemistry
Department of Molecular Chemistry and Materials Science

Overview

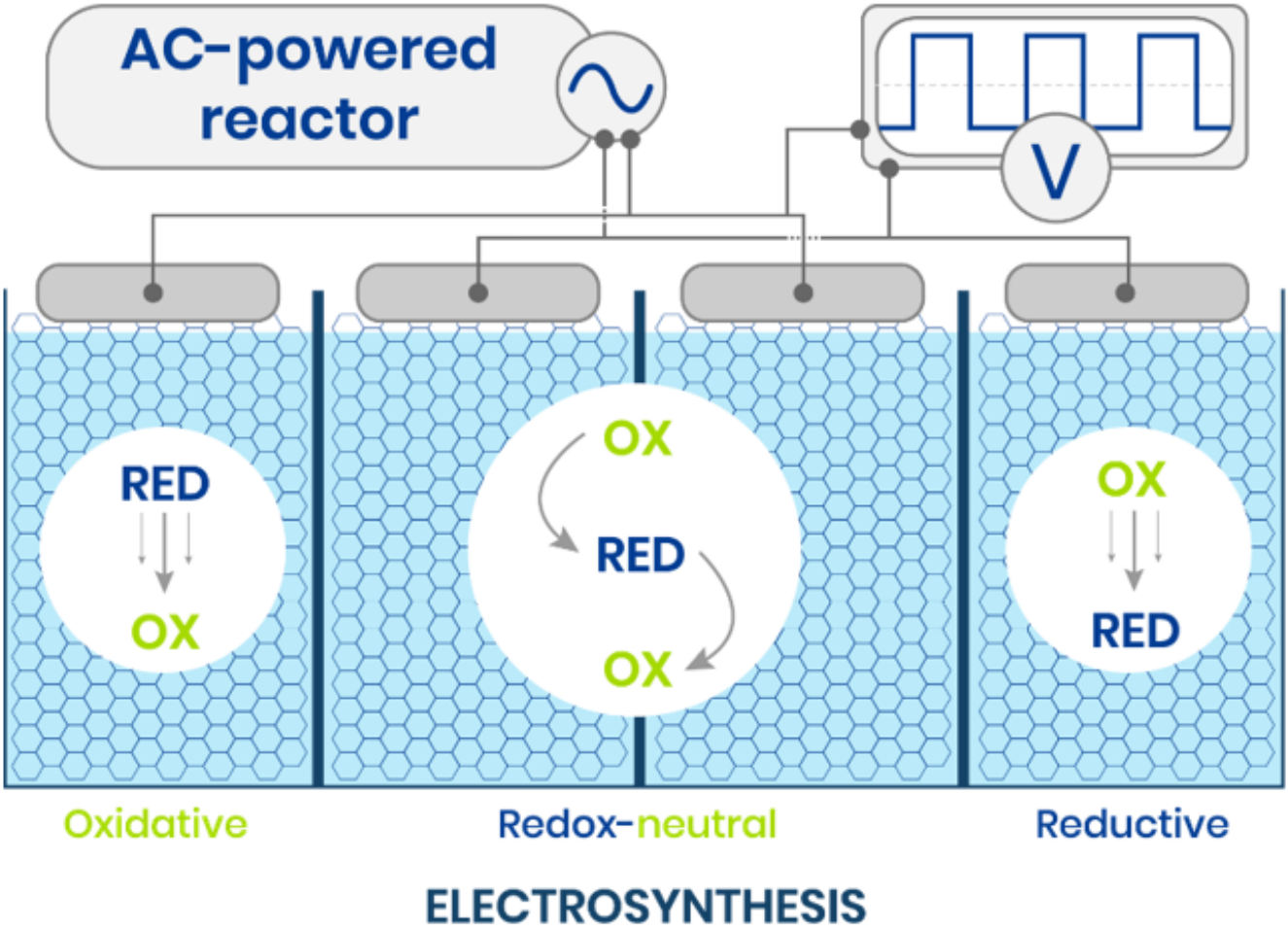
A scalable, stirring-free electro-synthesis method utilizes alternating current (AC) electrolysis to enable efficient redox-neutral, oxidative, and reductive transformations.

Applications

- Industrial-scale synthesis of chemicals and pharmaceutical ingredients
- Synthesis of viscous solutions or reactions with high substrate concentrations
- High-throughput electrochemical screening

Differentiation

- Scalable and Cost-Effective
- Wide Applicability: Supports a broad range of electrochemical transformations
- Environmentally Friendly
- Enhanced Efficiency and Selectivity



Development Stage

The technology has been demonstrated across multiple electro-synthesis processes, including redox-neutral, oxidative, and reductive transformations. It has been successfully proved for reactions of 50mmol, highlighting its scalability and industrial potential.

Patent Status

USA Published: Publication Number: US-2024-0167176-A1