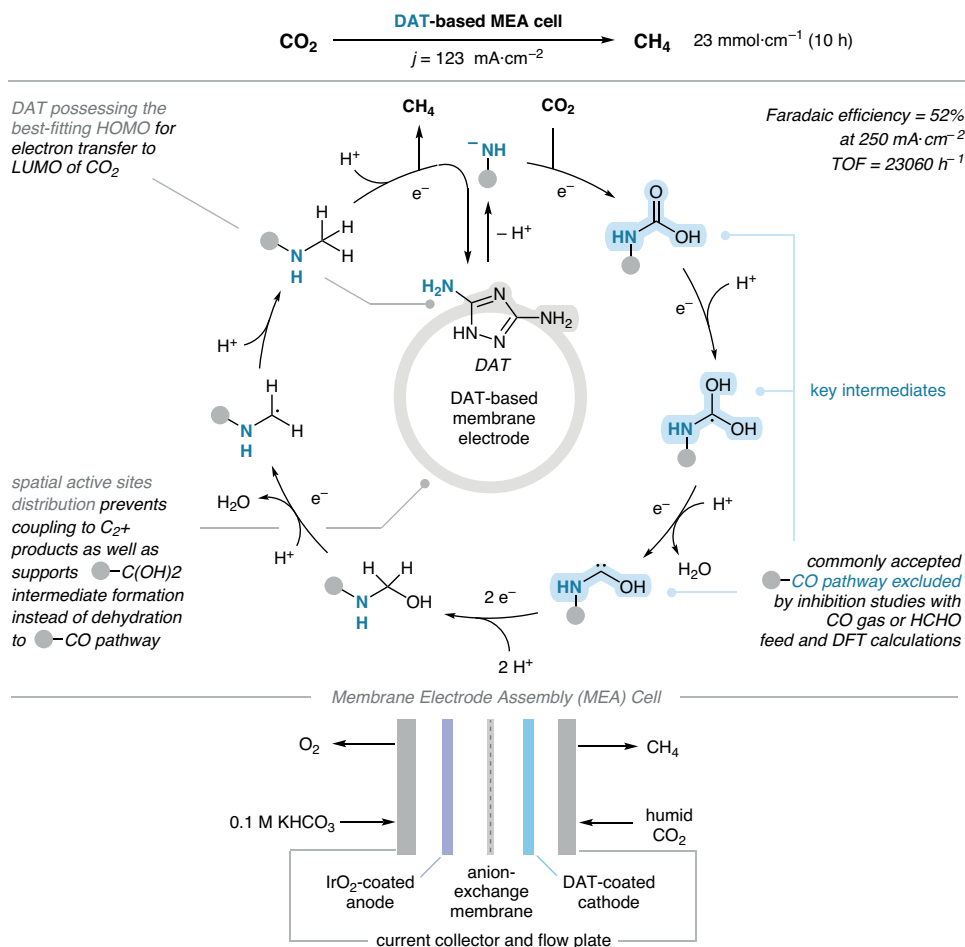


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Electroreduction of CO<sub>2</sub> to Methane with Triazole Molecular Catalysts

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# Electrochemical Organocatalytic Production of Methane



**Significance:** The authors report a diaminotriazole (DAT)-based electrochemical system for the reduction of CO<sub>2</sub> to CH<sub>4</sub>. Unique chemical properties of DAT (high electron density and the presence of highly nucleophilic NH<sub>2</sub> groups) allow for efficient multiple electron transfer steps as well as for the formation of a spatial active site network, maintaining process selectivity. The achieved level of efficiency and activity of CH<sub>4</sub> production is comparable to state-of-the-art single-site metal-based systems.

**Comment:** The CO<sub>2</sub> reduction to methane is extremely challenging both kinetically and thermodynamically. Electrochemical reductions often additionally suffer from low selectivity due to poor control over key intermediates. The authors overcame these challenges by directing the reaction along a novel pathway with low-energy intermediates whose formation is triggered and controlled by DAT catalyst. Although this pathway requires further investigation, the demonstrated results are undoubtedly encouraging.