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Review

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**Technological advances in CO<sub>2</sub> conversion electro-biorefinery: A step towards commercialization**

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**ABSTRACT**

The global atmospheric warming due to increased emissions of carbon dioxide (CO<sub>2</sub>) has attracted great attention in the last two decades. Although different CO<sub>2</sub> capture and storage platforms have been proposed, the utilization of captured CO<sub>2</sub> from industrial plants is progressively prevalent strategy due to concerns about the safety of terrestrial and aquatic CO<sub>2</sub> storage. Two utilization forms were proposed, direct utilization of CO<sub>2</sub> and conversion of CO<sub>2</sub> to chemicals and energy products. The latter strategy includes the bioelectrochemical techniques in which electricity can be used as an energy source for the microbial catalytic production of fuels and other organic products from CO<sub>2</sub>. This approach is a potential technique in which CO<sub>2</sub> emissions are not only reduced, but it also produce more value-added products. This review article highlights the different methodologies for the bioelectrochemical utilization of CO<sub>2</sub>, with distinctive focus on the potential opportunities for the commercialization of these techniques.

*Keywords:* Carbon dioxide, Electrochemical reduction, Carbon capture and utilization, Microbial electrosynthesis, Artificial Photosynthesis.

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