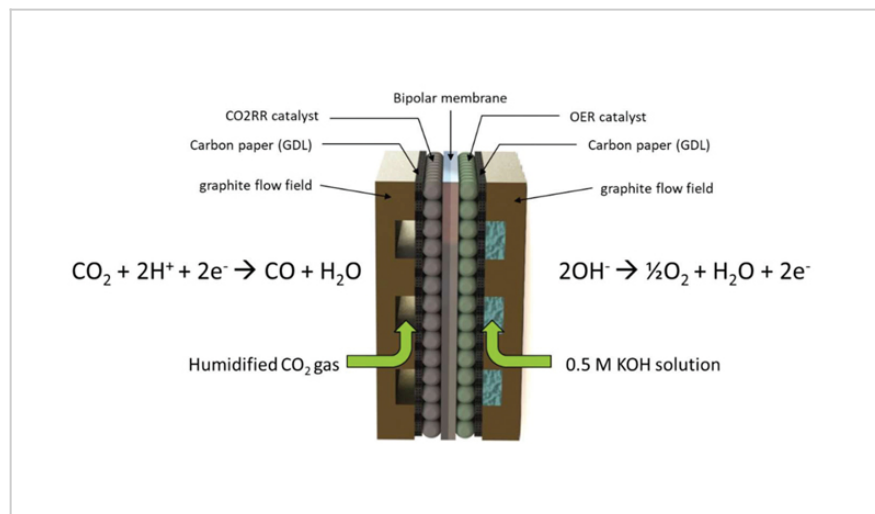


# Electrolyzer for Gaseous Carbon Dioxide

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Gas-fed CO<sub>2</sub> Electrolyzer

## Technology Summary

To combat the challenges of current CO<sub>2</sub> electrolysis technology, a novel system was designed where O<sub>2</sub> and high value chemicals (fuel products) are created from gaseous CO<sub>2</sub> and water. The system uses a bipolar membrane (BPM) based electrochemical cell, similar to current systems available to split water. The BPM allows CO<sub>2</sub> gas to be used at the cathode, eliminates the problem of separating reaction products from reactants, and minimizes the introduction of contaminants. The electrolysis cell additionally generates reaction products in the gas phase, which is advantageous in terms of the mass transport of products out of the cell and the separation of products. BPM-based cells were tested and are able to achieve high current densities and stable operation for over 14 hours.

## Application & Market Utility

Potential applications for this technology include fuel creation and air purification. The inventor has demonstrated production of syngas, an intermediate to synthetic natural gas, but expects that additional products are possible. This technology could also be integrated into air purification systems to lower environmental CO<sub>2</sub> levels. Applications may include confined, small, and/or crowded indoor spaces.

## Next Steps

Seeking research collaboration and licensing opportunities.

### TECHNOLOGY READINESS LEVEL

1-3

#### Seeking

Investment | Licensing | Research

#### Keywords

- CO<sub>2</sub> Electrolysis
- Electrochemical Cells
- Electrolyzer
- Gas CO<sub>2</sub> Exchange
- Alternative Fuel Production

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