

**TITLE**  
**Electrochemical Capture CO2 From Air with Electricity Storage**

**CASE NUMBER**  
**C16359**

**VALUE PROPOSITION**

- » The energy required to run this carbon capture system can be partially replaced by energy output by the system.
- » This system can be easily employed in existing industrial environments and be directly connected to various existing renewable power generation equipment.

**UNMET NEED**

- » The world emits about 43 billion tons of carbon dioxide (CO2) each year, and this number continues to rise annually.
- » Increased CO2 contributes to the greenhouse effect and global warming.
- » There is a need for a method of CO2 capture that is inexpensive, efficient, and environmentally friendly.

**TECHNICAL OVERVIEW**

- » Johns Hopkins inventors have created an innovative electrochemical system which can be implemented in CO2 capture and stores electrical energy simultaneously.
- » The system consists of a membrane reactor which allows for the creation and separation of hydrogen gas and caustic soda. The caustic soda will react with the CO2 source, allowing for the absorption of CO2 and generation of a sodium carbonate solution.
- » The hydrogen can be stored as electricity and when needed, can be used for electrical energy output.

**STAGE OF DEVELOPMENT**

- » A prototype of this invention has been created and is being tested.

**ASSOCIATED INVENTORS**

*Chemical and Biomolecular Engineering*  
*Whiting School of Engineering*  
**Chao Wang, Ph.D.**  
**Hao Shen**  
**Yuxuan Wang**  
**Guangye Zhou**

**TECHNOLOGY CLASSIFICATION**

- » Energy
- » Engineering
- » Industrial

**CONTACT INFORMATION**

**Lisa Schwier**  
Sr. Technology Licensing Associate  
667-306-8231  
[lschwier@jhu.edu](mailto:lschwier@jhu.edu)



**ASSOCIATED REPORTS OF INVENTION (ROIs) AND INTELLECTUAL PROPERTY (IP) FILING NUMBERS**

ROI#	TITLE	STATUS	PRIORITY DATE	IP FILING NUMBERS
C16359	Electrochemical Capture CO2 From Air with Electricity Storage	Pending	9/17/2021	PCT/US2022/076642