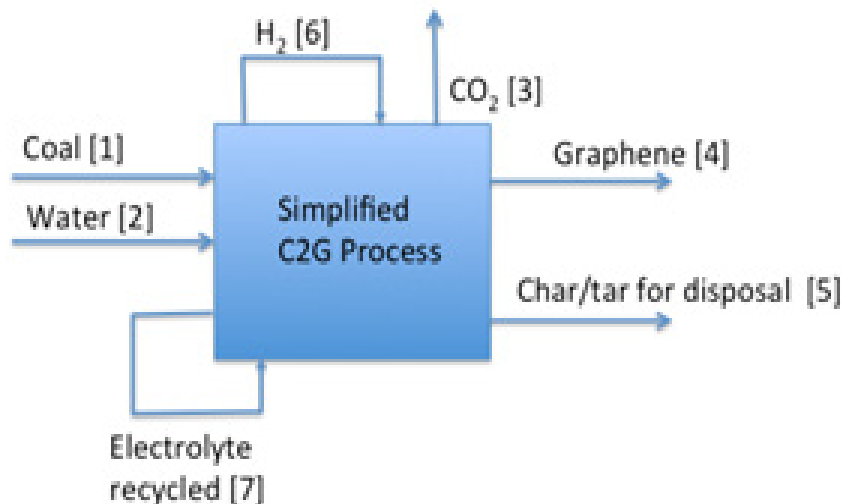


COAL-TO-GRAPHENE (C2G) PROCESS

OU ID: #14008

Overview

This invention is enabled by a patent pending technology, the “Coal to Graphene” Process, or C2G process, invented by Dr. Gerardine Botte, at Ohio University (OHIO). With this proposed technology breakthrough, coal can be selectively manipulated to synthesize a clean, advanced, and high value material, through an energy efficient and clean process. The inventor has been working on the development of the C2G process for several years whereby graphene can be grown directly on substrates, transferred onto other substrates, or scraped from the substrates according to the final application. CEER’s “graphene syrup” is produced by a simple process that utilizes coal at a cost of \$0.019 per lb. Current methods for graphene synthesis utilize graphite at a cost of \$1.5 per lb. When compared to current technologies, CEER’s “graphene syrup” allows a cost reduction of over 700% in the feed-stock source used, which in return will create a significant advantage for the manufacturing of advanced graphene based materials. High temperatures and/or vacuum conditions are not required in the process.



OHIO
UNIVERSITY

COAL-TO-GRAPHENE (C2G) PROCESS

OU ID: #14008

Benefits

- With no requirement for high temperatures (typically above 900 degrees Celsius), vacuum conditions, or expensive and potentially dangerous chemicals (sulfuric acid, nitric acid, and potassium chlorate) production costs are greatly reduced
- Whereas graphite must be imported (China, India, Brazil, Korea, and Canada are main sources), coal is abundant in the United States, offering an inexpensive and easily accessed supply of carbon
- The overall production process is “clean” and reduces the potential impact on the environment

Inventor

Dr. Gerardine (Gerri) Botte (Russ Professor Chemical and Biomolecular Engineering and Director Center for Electrochemical Engineering Research, OHIO) is the Director for the Center for Electrochemical Engineering Research (CEER) and the Center for Electrochemical Processes and Technology (CEProTECH), a planned NSF I/UCRC . Dr. Botte has been working on the analysis of electrochemical systems for the past fifteen years.

She is the Founding Director of the Center for Electrochemical Engineering Research at OHIO. Dr. Botte has 106 publications (46 publications in peer-reviewed journals, 5 book chapters, 13 granted patents, 28 pending patents, 11 peer-reviewed conference proceedings, and 3 reports/special publications) and has delivered over 170 presentations in international conferences. She is the Editor in Chief of the Journal of Applied Electrochemistry, a Charter Fellow of the National Academy of Inventors, and a Fellow of the World Technology Network. She is also the elected Chair of the Industrial Electrochemistry and Electrochemical Engineering Division of the Electrochemical Society.



Contact Us

Mark Foley
Technology Commercialization
Manager
P: 740.593.0813
E: foleym@ohio.edu



OHIO
UNIVERSITY