

LOW-COST PRODUCTION OF GRAPHENE FROM COAL

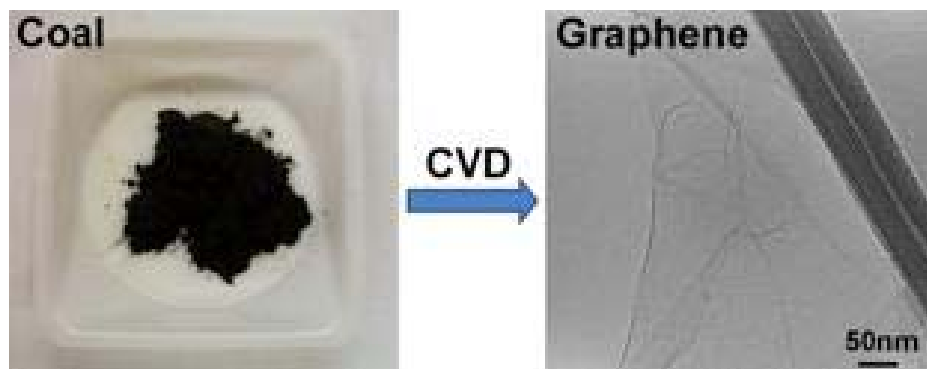
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Overview

Exploitation of the unique properties of graphene for new commercial applications is occurring at a phenomenal rate. However, current methods of graphene production are inefficient and expensive and do not provide a commercial supply to meet expected future demand. An industrially scalable production method capable of producing large quantities of low-cost, defect-free graphene is necessary to supply graphene manufacturers of the future.

Ohio University researcher, Dr. Gerrardine Botte, has developed a simple method of producing graphene from inexpensive and widely available coal. The process begins by subjecting ground coal to electrolysis. The resulting coal char is used as a carbon source for graphene growth via chemical vapor deposition (CVD).

This approach also eliminates dependence on graphite as the carbon feedstock for graphene production. Graphite deposits are limited, with China producing 70 percent of the world's supply. Currently there is no graphite mined in the United States, however, coal reserves are plentiful.



Benefits and Advantages

- Scalable process for defect-free graphene production
- Inexpensive and widely available feedstock (coal) eliminates dependence on graphite



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Commercial Applications

- Electronic display materials
- Filtration
- Flexible electronics
- Energy—batteries and solar panels

About the Inventor

Dr. Gerardine Botte (Distinguished University Professor and Russ Professor) is the Founder and Director for the Center for Electrochemical Engineering Research (CEER). Dr. Botte has been working on the analyses of electrochemical systems for the past seventeen years. Dr. Botte has been involved in the scale up of several electrochemical technologies, their commercialization, and in the spin-off of companies. Before attending graduate school, Dr. Botte worked as a process engineer in a petrochemical complex where she was involved in the synthesis of fertilizers and polymers.



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