

Washington University in St. Louis

Washington University Open Scholarship

Volume 13

Washington University
Undergraduate Research Digest

Spring 2018

Synthetic Scheme of Graphite Oxide Using Hummers' Method

Haoru Yang

Washington University in St. Louis

Follow this and additional works at: https://openscholarship.wustl.edu/wuurd_vol13

Recommended Citation

Yang, Haoru, "Synthetic Scheme of Graphite Oxide Using Hummers' Method" (2018). *Volume 13*. 227.
https://openscholarship.wustl.edu/wuurd_vol13/227

This Abstracts S-Z is brought to you for free and open access by the Washington University Undergraduate Research Digest at Washington University Open Scholarship. It has been accepted for inclusion in Volume 13 by an authorized administrator of Washington University Open Scholarship. For more information, please contact digital@wumail.wustl.edu.

SYNTHETIC SCHEME OF GRAPHITE OXIDE USING HUMMERS' METHOD

Haoru Yang

Mentor: Julio D'Arcy

Graphite oxide (GO) is an allotrope of carbon comprised of oxygen and hydrogen and it is produced by exposing graphite to strong oxidizing conditions resulting in the attachment of functional groups to the graphitic surface. This process expands the interlayer distance of graphite and makes GO easy to exfoliate into single layers, i.e., graphene oxide sheets. Although the exact structure of GO and the mechanism of its formation are still unclear, various approaches to oxidation have been reported. We chose the Hummers' synthetic method due to its safety and efficiency at oxidizing carbon; this protocol was modified to increase product yield. To determine the best path for synthesis, the product GO was characterized using atomic force microscopy (AFM) and Raman spectroscopy. Through optimization, we managed to exfoliate the product GO without reducing it due to prolonged exposure in heat. Finally, we generated a synthetic protocol to be referenced for future synthesis.