Graphite Oxide: An Efficient Carbon Based Material for Catalysis and Catalyst Support

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Catalyst is an important ingredient in organic synthesis. Many catalysts are known which show very good selectivity and reactivity but they are not green and sustainable. Therefore, scientists around the globe are trying to develop not only efficient but also green and sustainable catalysts. On the other hand, to avoid the agglomeration issues of nanoparticles, support materials also played a very crucial role. In both cases, carbon materials are far ahead of other type of materials. Among the various allotropes of carbon, graphite oxide (GO) occupies a supreme position because it has a large surface area with various functional groups. We exploit these properties of GO for the synthesis of various biologically, pharmaceutically, and industrially important organic molecules. Benzodiazepine and its derivatives are one of the most privileged structures in the pharmaceutical industry. It possesses a broad spectrum of activities. Mainly they are used to treat anxiety disorder. GO was utilized to synthesize 1,5-benzodiazepines and spirodibenzo[1,4]diazepines under green and sustainable conditions1,2. Palladiums are mainly used to construct carbon-carbon and carbon-heteroatom bonds. Palladium salts are costly and moreover, reusability is one of the biggest challenges. So, palladium nanoparticles was grafted on GO surface (Pd@GO) and utilized to make Carbon-Carbon bond followed by coumarin synthesis using C-H activation of aryans and alkynes3.

References:

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**Biography:**

Dr. Amarta Kumar Pal acquired his master's degree in chemistry from the University of Calcutta, India in 2001. Then, he joined in Prof. K. C. Majumder’s group in University of Kalyani, India, to pursue his Ph.D. degree. He received his Ph.D. in 2007 and went to Taiwan for his post-doctoral study. He spent around one year at Academia Sinica, Taiwan in Prof. C. H. Lin’s laboratory. In 2009, he joined as an Assistant Professor at the Department of Chemistry, in North-Eastern Hill University. He has been promoted to Associate Professor in 2021. He produced seven Ph.D. students and published more than fifty publications in international peer-reviewed journals. His research interests are the development of green and sustainable methods for organic synthesis and, the synthesis of biologically important heterocyclic molecules.

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