Temperature Effect on the Production of Graphene Oxide and Graphite Oxide.

Flavio Pendolino[1], Nerina Armata[2], Tiziana Masullo[3], Angela Cuttitta[3], Paolo Colombo[1]

[1]University of Padova, via Marzolo 9, 35131 Padova, Italy
[2]University of Palermo, Viale delle Scienze, 90128 Palermo, Italy
[3]Consiglio Nazionale delle Ricerche (IAMC-CNR), Via del Faro 3, 91021 Torretta Granitola Fz. Campobello di Mazara, Italy

flavio.pendolino@unipd.it

Abstract

Carbon allotropes and derivates show novel behavior in a framework of promising technologies [2-4]. Lately, graphene oxide (single) and graphite oxide (multilayer), have been considered as potential materials in energy sustainable technologies, such as photovoltaic, solar heater [4-5]. Our work issues the effect of the temperature on the synthesis/oxidation of graphene-like materials and producing a different final products (see Figures). By using a few-steps method [6], two forms of carbon oxides are generated, i.e. single or multilayer, which is affected by the operating temperature. Even if apparently similar, these materials exhibit distinctive physical and chemical properties with a specific reactivity which impact the future applications. Archived behaviours suggest a context where the properties needed for a material can be straightforward obtained by modifying the temperature. Furthermore, the properties of the final oxidized products can be varied by using a different allotrope (e.g. single wall material) as starting materials. The prospective of modulate/engineering the oxided graphene-like materials by functionalizing oxygen domains, owing to the feasibility of a low cost and scale up production and the advantage of formulating novel materials with specific features.

References

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Figures