Graphene: Material description, elaboration methods and main properties

S.MAHDID, N.DOKHAN, A.KELLOU

Abstract : Nanomaterials containing carbon have open new ways for the development of interesting and innovator applications. Among these materials, the mother of all graphite shapes, the graphene, is becoming a material of a great interest because of their remarkable properties (physical, chemical and electrical ones). Currently, the graphene presents a great promise for potential applications in many technological fields such as: sensors, composites, transparent conducting films, solar cells, storage medium of gas, saturable absorber for pulsed laser etc.The development of graphene is a technological challenge; the methods of current production are required with a balance between the facility of the production and the quality of materials. Our present work consist on a digest of the most significant works and protocols presented by the scientific community. It selects ones which ensure a graphene with optimal properties; it also discuss the main physical and chemical phenomenon responsible of the graphene formation. Solvothermal technique is an interesting way to synthesize graphene sheets. Firstly Graphene Oxide (GO) is elaborated, followed by its reduction in different solvents (for example: hydrazine, L-glutathione, Dimethylhydrazine, aluminum powder, etc.). This last approach is regarded as more suitable because of its simplicity, reliability, adequacy on a large scale and production at low cost.

Keywords : Graphene, solvothermale technique, Chemical reduction