Graphene status and needs for industry integration

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Abstract

The unique properties of graphene demonstrate at laboratory scale the strong potential of this material to be implemented into technological applications such us electronics, opto-electronics, sensors, touch screen and display technology among others. However, each application requires specific properties and therefore a customized graphene material. The right graphene format, film or powder, needs to be selected and its production and final properties adjusted to the desired application. In this sense, in order to make this material disruptive and competitive to promote commercial applications there are still some needs that have to be fulfilled.

The presentation assesses the current status of graphene production, up-scaling and integration. We discuss a series of items that influence graphene time to market. Chemical Vapour Deposition (CVD) represents the most competitive production method for monolayer graphene. The transfer process and the substrate are two of the keys for graphene performance. Here we show the need to develop the right transfer process depending on the substrate where graphene is deposited and the required properties. In addition, sometimes graphene needs to be doped [1], multilayer stacked or encapsulated. Characterization techniques for large area analysis become essential in order to ensure the good quality of the films [2]. Similarly, we will also review the status of the graphene powder.

References

[1] Lorenzo D'Arsié, Santiago Esconjauregui, Robert Weatherup, Yuzheng Guo, Sunil Bhardwaj, Alba Centeno, Amaia Zurutuza, Cinzia Cepek, and John Robertson, Applied Physics Letters **105**, (2014) 103103.

[2] Jonas D. Buron, David M. A. Mackenzie, Dirch. H. Petersen, Amaia Pesquera, Alba Centeno, Peter Bøggild, Amaia Zurutuza, and Peter U. Jepsen, Optics Express, **23(24)** (2015) 30721.