

Relevance of an adequate of selection of the graphene materials and processing conditions in the preparation of GRM composites

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The bulk graphene materials market will grow to 350 € million in 2025. Their application in composites is the largest segment, followed by energy storage [1]. Several reviews analysed the applications of the different graphene and related products in composites.[2, 1b]

Graphene materials (GRM) are a big family of materials with remarkable differences in morphology, dimensions, aspect ratio, surface chemistry, etc. An adequate selection of the GRM and processing technique is a key factor for achieve the desired properties. Also and adequate nomenclature and standardised or industrial accepted characterization techniques are needed for the application and avoid lost of efforts and resources.

In this presentation we will compare the influence of the various graphene materials prepared by different methodologies, from LPE to oxidation/reduction, with variations in lateral size, dimension and surface chemistry and processing technologies for the preparation of composites in the final properties of the composites.

- [2] a) P Samorì, I A Kinloch, X Feng and V Palermo, 2D Mater. 2, (2015) 030205 b) R. J. Young, I. A. Kinloch, L. G., Kosty. S. Novoselov, Composites Science and Technology, 72, (2012) 1459–1476,

Figures

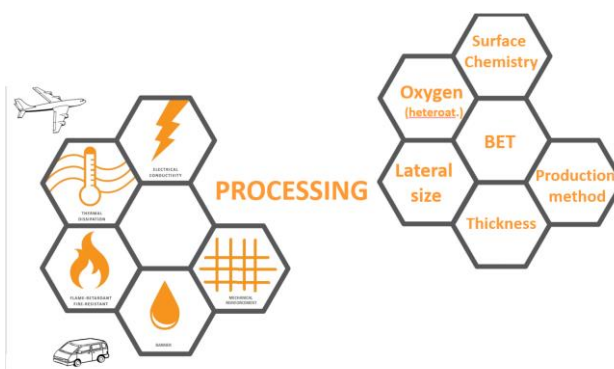


Figure 1: . Scheme of GRM characteristics vs properties

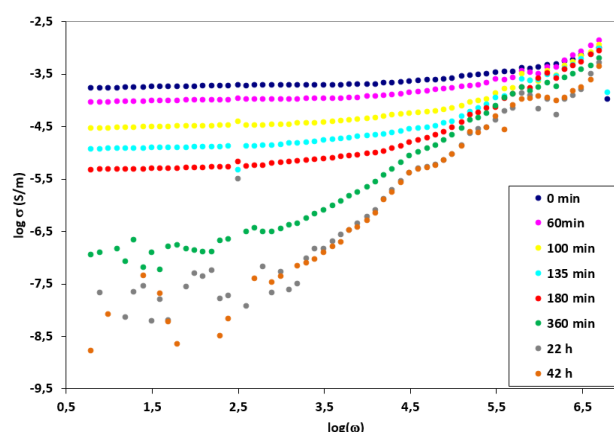


Figure 2: Monitorization of a.c. conductivity during the polymerization of a GRM-epoxy composite

References

- [1] a) Zh Ma, R. Kozarsky, M. Holman., GRAPHENE MARKET UPDATE. LUX RESEARCH (2014). b) Ferrari A Cet al Nanoscale, 7, (2015), 4598–810 c) M. Peplow, Nature, 522, 268, (2015)