

## Graphene obtained via sonication for the manufacture of daily products

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Graphene, an extraordinary two-dimensional carbon material with a honeycomb structure, has been the focus of many researches intended to improve daily life due to its characteristics and extraordinary mechanical, electronic and optical properties [1]. There are two different ways to synthesized graphene: Bottom-up and Top Down methods. Within the Top Down methods, one of the most promising is the exfoliation of graphite.

In this study, sonication has been used to exfoliate the sheets of graphite powder in the presence of a mixture of different surfactants in order to obtain graphene. Hansen parameters have been used to obtain the most suitable surfactant mixture and the best proportion between them. It has been tested two different mixtures: acetone-water (75 wt. %:25 wt. %) and 1-butanol: 2-butanol (50 wt. %: 50 wt. %). For both mixtures sonication conditions have been optimized (mixture temperature, sonication power, sonication time and concentration of the mixture) to obtain better quality graphene.

The synthesized graphene can be used to develop a large variety of application that could improve everyday life such as graphene-based inks, graphene-based flat tenses, graphene-based capacitors used for electronic bicycles, graphene-based musical instruments or graphene-based advanced nanocomposites (Fig. 1).

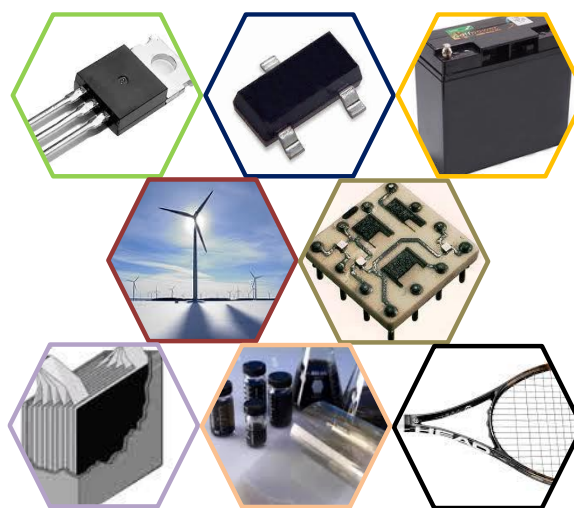


Fig.1 Graphene-based applications.

### References

1. M.P. Lavin-Lopez, et al., PCCP. 16: 2962 (2014).