

The potential of graphene oxide and its derivatives in fabrication of 3D printed composites

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Abalonyx is a Norwegian leading producer of graphene oxide (GO) and graphene oxide (rGO) derivatives. The current production capacity for GO and rGO is 2 and 1 kg/day, respectively. Graphene is a promising reinforcement to tailor the material structure at nanometre scale in order to obtain stronger and tougher engineering composites. The characteristics of graphene derivatives such as degree of reduction (C/O ratio) and exfoliation (specific surface area), play a critical role in a well dispersion of them in the ceramic and polymer matrices. Therefore, there is a need to tune the properties of graphene to obtain a better functionality. In this work, we present the results obtained for different synthesized rGOs with different characteristics. These rGOs have been used as an additive in several H2020 EU projects. We will show some parts of the obtained results.

References

- [1] Eqtesadi, S., Motealleh, A., Miranda, P., Lemos, A., Rebelo, A., Ferreira, J.M.F., 2013a. Mater. Lett. 93, 68–71.
- [2] Reinforcement with reduced graphene oxide of bioactive glass scaffolds fabricated by robocasting. J. Eur. Ceram. Soc. 37, 3695–3704.

Figures

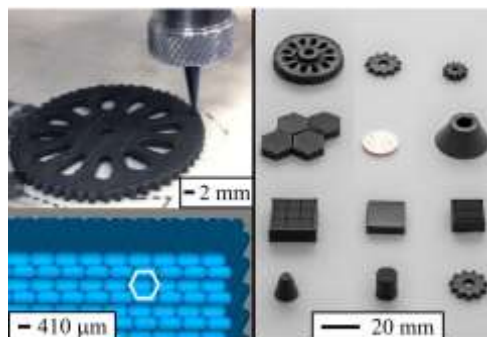


Figure 1:(A) Optical image captured *in situ* during the 3D printing of a geometrically-complex circular gear. (B) Optical images of several B4C green parts shaped by RC, and then dried. (C) View of a simple CAD model showing the parallel raster pattern used.