

# Upcoming applications of graphene oxide and graphene oxide derivatives

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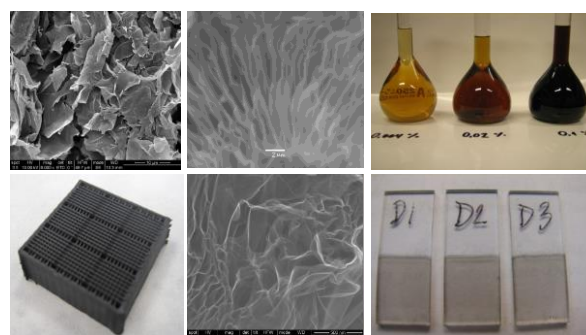
## Abstract

Graphene oxide (GO) has the tremendous advantage of being a material easy to modify to become compatible with a wide range of requirements. In its virgin state, it is a highly oxidized solid acid easily dispersible in polar solvents as single layers 1 nm thick. GO can be reduced to become more or less graphene-like rGO, and both GO and rGO can be de-acidified, nitrogen doped and functionalised to obtain new properties. GO and GO-derivatives (Fig. 1) have been reported to have potential for a range of applications, such as corrosion protection, water treatment, composites, lubricants, energy storage, photo-catalysts, sensors, sports equipment and medical. Abalonyx, as a specialised graphene oxide producer is continuously monitoring upcoming applications with the ambition to provide optimized GO-products for industrial applications.

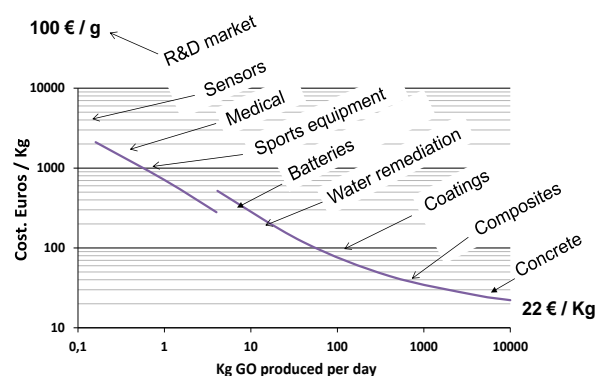
From an industrial end-user perspective, concerns apart from relevant chemistry are costs, availability and hazards. Costs are strongly related to production volumes (Fig. 2) and availability is related to proven production capacity, preferably by more than one producer. Regarding hazards, the picture is not yet complete, especially related to interaction with cells, being the subject of several recent studies.

Building credibility in all aspects is a step by step process, that is now underway.

## Figures



**Figure 1:** Examples of GO and rGO in different forms: powders, disperions, scaffolds, aerogels and transparent conductive films.



**Figure 2:** Cost predictions for GO as a function of volumes produced per day, with indicated cost tolerances for selected potential markets and applications