Taylor-made E-Graphenes: The right graphene for (m)any application(s)

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The process of electrochemical exfoliation and functionalization of graphene, developed at TU Dresden and patented by Sixonia Tech creates the ability to functionalize few-layer graphenes deliberately and precisely directly during their production. This versatility allows to modify graphene solutions to suit selected substrates, intermediates or end compounds. Building the knowhow to tailor the graphene-solution-substrate systems enables us to achieve desired performance goals and meet particular application process requirements. By providing good scalability and yield, low production costs and the good processability, our mission is to unleash the currently limited potential of graphene in various fields.
As an example, our E-Graphenes can be functionalized to be dispersible in water without the need for surfactants (Fig. 1), while still maintaining an intrinsic conductivity that is orders of magnitude higher than that of commonly used reduced graphene oxide (rGO) materials.

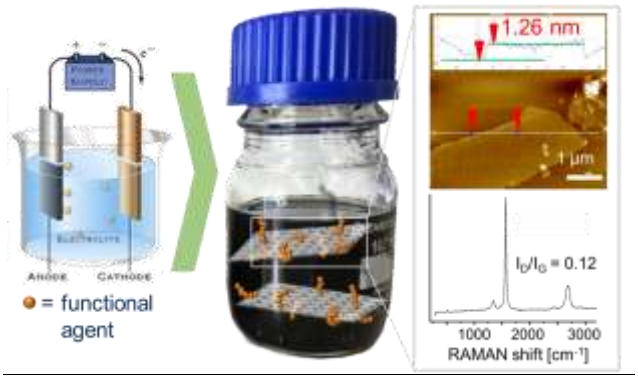

Figure 1: Surfactant-free aqueous dispersion of functionalized high-quality few-layer graphene.

The scalable and eco-friendly process technology opens up new possibilities and prospects for the applications of graphene, in the field of inks, composites, sensors, energy storage and energy conversion.

Figure 2: Customizable conductive inks and high viscosity formulations based on our advanced E-Graphenes.

Sixonia Tech can help to identify the most suitable graphene for a given application and formulate it (Fig. 2), to facilitate its integration into the desired application.
Compared to other "graphene" products, E-Graphenes show a superior combination of tailorable properties within a single material, such as large flake-size in the µm-range, low thickness in the range of 1-10 layers and good process-ability. Unlike in GO, the defined functional groups can provide an improved processability, while still maintaining a good electrical conductivity and reasonable sheet size.

References

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