

Graphene and other carbon nanoforms for a sustainable world

Alain Pénicaud¹

¹ Univ. Bordeaux, CNRS, Centre de Recherche Paul Pascal, UMR5031, 33600 Pessac, France

Alain.penicaud@crpp.cnrs.fr

Graphene and carbon nanotubes are potentially sustainable materials able to replace metals (heat and electrical transport), indium tin oxide (displays) and if not recycled, simply burned away avoiding hazardous wastes linked to metal disposal. According to IUPAC, Graphene is a single layer of hexagonally arranged carbon atoms. However, its definition gets fuzzy in research literature and even more in the industrial world.[1] It is thus quite important to fully characterize graphene and/or other carbon nanoforms in order to be able to correctly assess its performances / interest. I will describe surfactant-free, aqueous, dispersions of *single layer graphene* Eau de Graphene (EdG), in which hydroxyl ion adsorption stabilizes graphene sheets in water, [2-4] and on the associated spin-off company, Carbon Waters.[5] Information about thickness, lateral size and defect analysis of graphene in EdG will be described. Recent works on adapting the EdG strategy to carbon nanotubes will also be described.[6] Finally, starting with a nanocarbon originating from biomethane, carbon nanopucks have been thoroughly characterized and used to prepare conducting nanocarbon inks,[7] conductive rubbers,[8,9] nanocarbon/iron nanoparticle composite electrocatalysts for fuel cell technology,[10,11] and microsupercapacitors, all of them might contribute to a cleaner tomorrow.

References

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