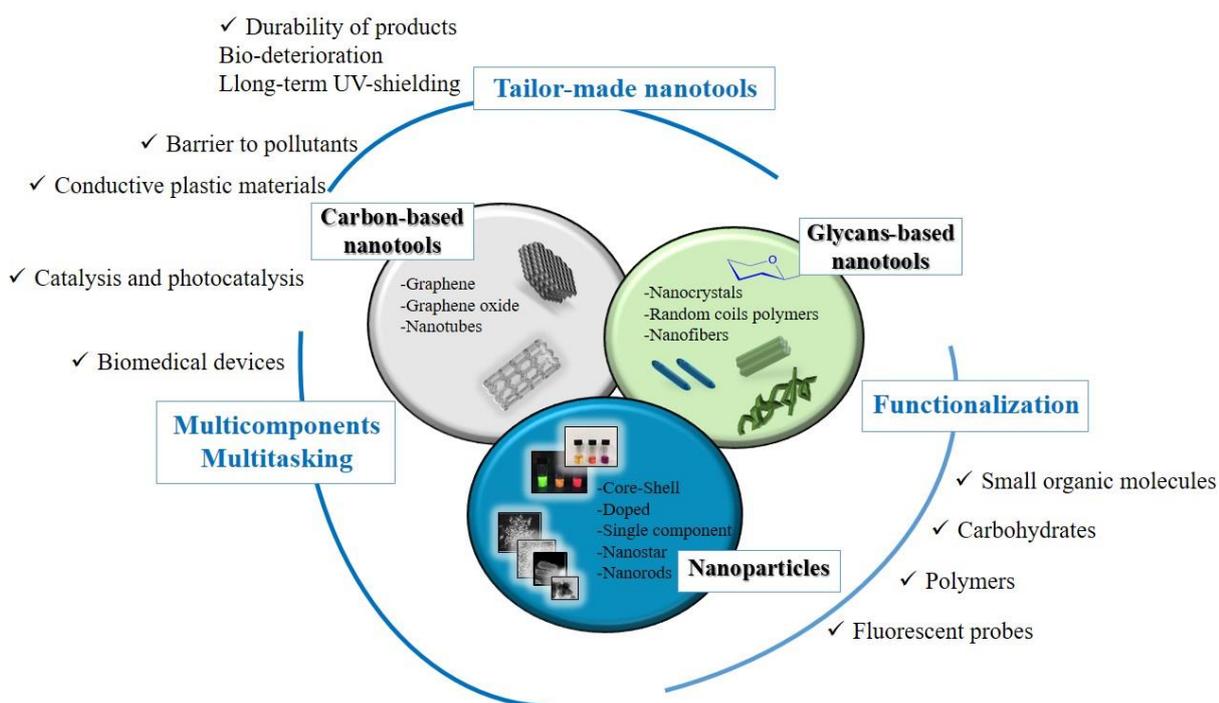


WorkingGroup on Carbon- and Glycans-based NANOstructured materials

We Go NANO

We Go NANO is a Working Group, which consists of researchers working in Academia, who decided to join their synergistic expertise to move forward the development of Carbon and Glycan-based Nanostructured materials not only for academia but also with a special focus on industrial applications. Despite many impressive achievements in the preparation of nanostructured materials, the main industrial applications rely on the use of raw materials. Indeed, the main issues related to the transfer of technology, in the field of functionalized nano-materials, concern the scale up, the final physiochemical properties of the products and the incidence of these compounds on the final cost of the industrial products

Specifically, we provide expertise concerning the development of **nanomaterials tailor-made for specific needs**. The workflow moves from the rational design of *ad hoc* nanomaterials to the development of the final product taking into account the scale up of the process. This goal will be achieved starting from basic research but bearing in mind the final step: the technology transfer to industrial processes.



In particular, We Go NANO is focused on:

- ✓ Functionalized carbon-based (*e.g.* graphene, graphene oxide, nanotubes) and glycan-based (*e.g.* nanoparticles, polymers) nanostructured materials. The functionalization can be provided accordingly with the desired properties of the final product and it includes small organic molecules, carbohydrates (from mono to oligosaccharides), polymers and fluorescent probes.
- ✓ Nanocomposite: carbon-based and glycan-based nanostructured materials + nanoparticles and/or polymers, clays, minerals.

- ✓ Multifunctional hybrid biocompatible polymer-based nanoplatform.
- ✓ Functionalized nanoparticles with diverse shape and composition.

Nanostructured materials developed by We Go NANO are designed as chemical tools to address problems related to diverse industrial and research fields like:

- Durability of final products: Bio-deterioration (*e.g.* antibacterial, anti-mold, anti-fungal), long-term UV-shielding.
- Barrier to pollutants
- Conductive plastic materials
- Catalysis and photocatalysis
- Biomedical devices

The working group is in Firenze (Polo Scientifico e Tecnologico-Department of Chemistry ‘Ugo Schiff’, University of Firenze), in Padova (Department of Chemistry, University of Padova), in Arezzo (Nanesa S.r.l. production facility), in Portici and Bari research lab (Jaber Innovation S.r.l.) and is composed by:

Unit of Firenze: Barbara Richichi, Stefano Cicchi, Debora Berti, Massimo Bonini.

Unit of Padova: Michele Maggini, Enzo Menna, Tommaso Carofiglio, Miriam Mba

Jaber Innovation S.r.l. – Innovative SME active in technology transfer field with 2 research lab (Unit of Portici c/o IPCB CNR and Unit of Bari) involving 10 researcher in biomaterials and advanced nanocomposites. Giuseppe Iannaccone, Phd Stefania Cometa, Eng. Francesco Bertocchi.

Nanesa S.r.l. – partner of the Graphene Flagship and working as graphene related nanomaterials producer. Eng. Francesco Cristiano, Eng. Francesco Bertocchi.

The workgroup has specific expertise with the different approaches used to functionalise and characterize nanostructured material: ball milling, flow chemistry, microwaves, organic synthesis.

Being located in two “Departments of Excellence” recognised by MIUR (Bando Dipartimenti di Eccellenza 2018-2022) the workgroup has access to a wide toolkit for the characterization of nanomaterials (*e.g.* UV-Vis, NMR, TEM, SAXS, XPS, Elemental Analysis, TGA).

WeGONANO has developed strong collaborations with biology and medicine research groups so that, if needed, the group can cover also issues related to biocompatibility, toxicity, biocide activity.

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