An insight on graphene quantum dots
Design, preparation and exploiting their unique bioapplications

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In the last few decades, significant advances were achieved in the research of carbon nanomaterials. Nowadays, the nanocarbon family spans from fullerene, the first member, to carbon dots (CDs), the last to join. CDs are a fascinating class of nanocarbons that comprise several types, including graphene quantum dots (GQDs). GQDs are quasi-spherical nanoparticles with sizes below 10 nm and they typically display excitation wavelength-dependent, excellent photostability, high-water solubility and good biocompatibility. Furthermore, they can be easily functionalized with nanoparticles, biomolecules and/or molecules. Due to these unique properties, GQDs have gained tremendous attention for their enormous potential in many applications, especially in the biomedical field.

An overview of the CDs family with a special focus on GQDs with multicolor emission will be provided in the present talk. From its obtaining through a bottom-up approach by microwave-assisted pyrolysis to explain their unique properties. Shortly, it will be displayed the possible tuning of this material towards the desire application. Finally, their potential as a bioimaging platform will be demonstrated.