Multicolor Emissive Graphene Quantum Dots as Versatile Carriers in Nanomedicine and Beyond

I. Jénnifer Gómez
jennifer.gomez@mail.muni.cz

In the last few decades, significant advances were achieved in carbon nanomaterials research. 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.

During this talk, an overview of the synthesis and characterization of GQDs will be presented with particular attention to their modification towards specific applications. For instance, several versatile carriers in nanomedicine using GQDs will be mentioned, such as drug delivery systems and photodynamic therapy. We will go beyond biomedical application towards forming 0D-2D heterostructures for π-π recognition.