Development of Photoelectrodes Based on Xanthene Dyes and Carbon Nanostructures for Hydrogen Production

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Project PhotoXanDyC combines xanthene dyes and carbon nanostructures towards more efficient photoelectrochemical devices. Xanthenes (NH_2-X), a class of highly fluorescence dye molecules whose importance relies on their sustainable catalyst-free synthesis and excellent alcohol solubility are fluorophores, whose luminescent properties make them suitable sensitizers for semiconducting oxides, amplifying their capacity for light absorption. By integrating these organic dyes with carbon nanomaterials (Figure 1) as electron transfer channels, novel hybrid nanostructures with improved optoelectronic properties (Figure 2) could be realizable, thus paving the way for developing efficient and low-cost systems towards clean energy production via water splitting methodologies.

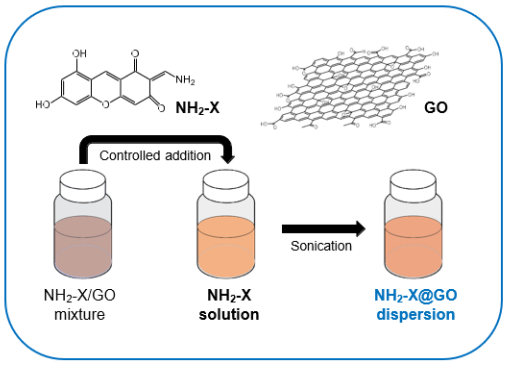


Fig. 1. Experimental protocol towards new hybrid nanostructures

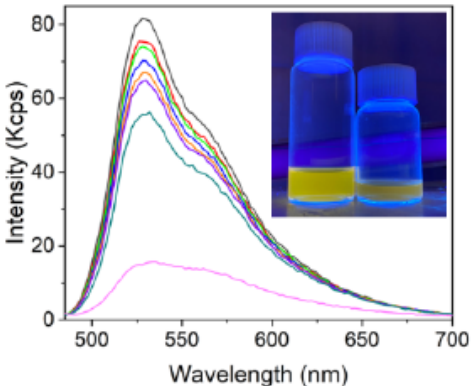


Fig. 2. Fluorescence quenching spectra