**Spectroscopic properties of the complexes formed by graphene oxide and porphyrins substituted with aryl group**

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**Abstract**
Nowadays, research of graphite oxide (GO) modified by donor or acceptor organic molecules is a hot topic because these materials exhibit novel and unique properties. Recent studies show that this type of structures have really interesting photoelectrochemical properties and can be practically used in optoelectronics or molecular photovoltaics (field-effect transistors, photovoltaic devices, nonlinear optics applications) [1,2].
The aim was to create new hybrid systems with donor-acceptor properties, consisting of graphite oxide and porphyrins substituted with different aryl derivatives.
Hybrid systems based on GO and porphyrin derivatives (eg. 5,10,15,20 - Tetrakis (4-hydroxy-xyphenyl) -21H, 23H-porphine) were obtained by simple sonication. In the studied systems we observed the similar interaction between GO and porphyrin as in other GO complexes obtained by complicated method. The detailed spectroscopic properties of these composites were investigated by using UV-Vis, fluorescence, IR absorption spectroscopy, and Raman scattering technique. The study shows that the electrostatic and π-π stacking and H-bonding cooperative interactions between GO and pophyrin are probably the main driving forces for complexation.
The changes in IR absorption and Raman spectra, and fluorescence quenching with increasing concentrations of GO may be associated with charge transfer and/or energy between the hybrid structures, which was also indicated by Geng and Shu [2,3].

**References**
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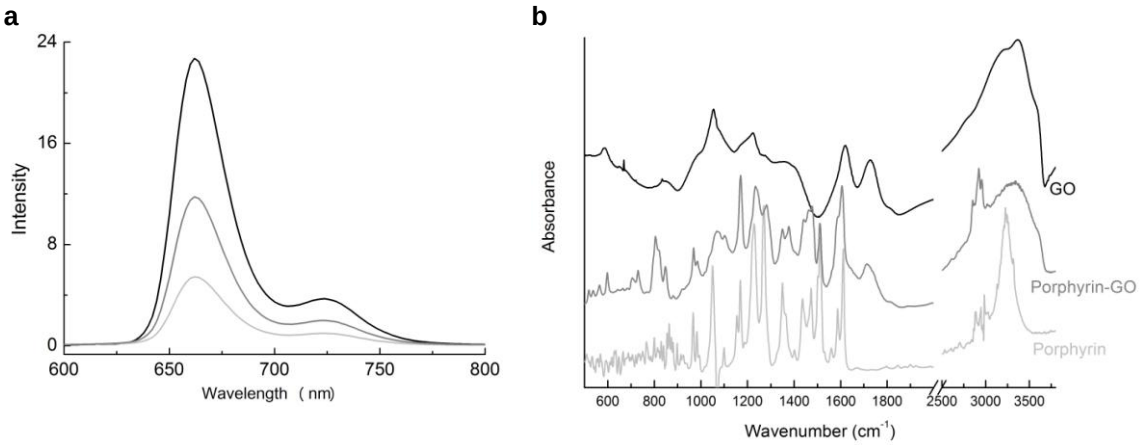


**Figure 1. The fluorescence emission spectra of Porphyrin-GO hybride (a) and IR absorption spectra (b) of Porphyrin, Go and Porphyrin-GO hybride**

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