

“Turn on” fluorescence enhancement of Zn octacarboxyphthaloyanine-graphene oxide conjugates by hydrogen peroxide

Abstract

Zn octacarboxy phthalocyanine-reduced graphene oxide or graphene oxide conjugates were characterized by absorption spectroscopy, transmission electron microscopy, fluorescence spectroscopy, X-ray diffraction, thermo gravimetric analysis and X-ray photon spectroscopy. The presence of reduced graphene oxide or graphene oxide resulted in the quenching (turn on) of Zn octacarboxy phthalocyanine fluorescence which can be explained by photoinduced electron transfer. Zn octacarboxy phthalocyanine-reduced graphene oxide or graphene oxide conjugates “turned on” fluorescence showed a linear response to hydrogen peroxide hence their potential to be used as sensors. The nanoprobe developed showed high selectivity towards hydrogen peroxide in the presence of physiological interferences.