

Nanoparticles of oxides doped with rare earth ions for theranostic applications

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Biocompatible ZnO nanoparticles (NPs) doped with rare earth metal ions act as fluorescence labels allowing early cancer detection [1]. Their fluorescence is observed upon host-related excitation, which we used to trace their distribution in the body. Studying their fluorescence we proved that NPs can penetrate practically all physiological barriers, including intestinal and blood-brain barrier. Their effective trafficking to the areas of cancer cells was observed. Importantly, ZnO NPs can also act as drug delivery systems transporting a given medicine to area of tumour.

[1] M.M. Godlewski, et al., New generation of oxide-based nanoparticles for the applications in early cancer detection and diagnostics, *Nanotechnol. Rev.* 9, 274 (2020).

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