

## UCNP-based Nanomedicine for Photodynamic Therapy and Imaging

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Over the recent years, photodynamic therapy (PDT) is intensively recognized as a promising treatment for a variety of diseases due to their low cost, highly localized, fewer side effects as compared with typical chemotherapy. However, a main disadvantage in the current therapy is the small penetration depth because of the light absorption and scattering by biological tissues, resulting in unsuccessful therapeutic effects. Unlike conventional light source, near-infrared (NIR) irradiation shows larger penetration distance in tissue with lower photodamage in the cells. Especially, upconversion nanoparticles (UCNPs) has long wavelength which means deep penetration in the NIR region. In this study, we synthesized UCNPs by hydrothermal method and employed FA-conjugated biocompatible block copolymers for improving their stability. The composition, optical property and morphology of UCNP-based nanomedicine were investigated. Also, phototoxicity and cellular uptake were conducted using tumor cells.