

Multifunctional Nanomaterials for Modulation of Hypoxic Microenvironments

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Due to their unique physicochemical properties, inorganic nanoparticles (NPs) have emerged as novel imaging, diagnostic, and therapeutic agents for the future biomedical field. In particular, hypoxic inflammatory microenvironments, which is often found at disease sites in the body, can be easily controlled using inorganic NPs with various combinations. Catalytic inorganic NPs continuously generate oxygen using intracellular hydrogen peroxide in the hypoxic microenvironment. They can also control the phenotype of macrophages in the inflammatory microenvironment, alleviating the inflammation in inflamed tissues. Moreover, immune cell can be targeted using the NPs functionalized with targeting moieties, enabling the delivery of the functional NPs to inflammatory microenvironments. I would like to describes the applications of multifunctional inorganic NPs for modulation of hypoxic and inflammatory microenvironments for cancer and rheumatoid arthritis treatment