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ACCEPTED MANUSCRIPT

Roadmap for metal nanoparticles in radiation therapy: current status, translational challenges, and future directions

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Abstract

This roadmap outlines the potential roles of metallic nanoparticles (MNPs) in the field of radiation therapy. MNPs made up of a wide range of materials (from Titanium, $Z=22$, to Bismuth, $Z=83$) and a similarly wide spectrum of potential clinical applications, including diagnostic, therapeutic (radiation dose enhancers, hyperthermia inducers, drug delivery vehicles, vaccine adjuvants, photosensitizers, enhancers of immunotherapy) and theranostic (combining both diagnostic and therapeutic), are being fabricated and evaluated. This roadmap covers contributions from experts in these topics summarizing their view of the current status and challenges, as well as expected advancements in technology to address these challenges.

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