

Radiolanthanides Encapsulated in Fullerenes: A New Platform for Biomedical Applications

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Several years ago we reported the encapsulation of the ¹⁷⁷Lu radiolanthanide inside a fullerene cage, ¹⁷⁷Lu_xLu_(3-x)N@C₈₀, and subsequently conjugated with the glioblastoma tumor-targeting cytokine, interleukin-13 (IL-13).^[1] Unfortunately, the radiochemical yield was very low in this preparation. To circumvent this problem, the radiolabel can be attached to the exohedral surface of the metallofullerene cage either by an external DOTA ligand^[2,3] or direct functionalization of the sp² carbon cage surface.^[4] However, the direct encapsulation of the radiolanthanide inside the fullerene cage has several advantages including complete shielding of the radionuclide from the biological environment. Our recent results and strategies for preparing radiolanthanides encapsulated in fullerenes for biomedical applications will be the focus of this presentation.

References:

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