

Gold Nanorods-Encapsulated Implantable Microcube for Photothermal Therapy

문석준, 봉기완[†], 문현준, 구민희¹, 이현지, 양재문¹, 윤나라¹

고려대학교; ¹연세대학교

(bong98@korea.ac.kr[†])

Gold nanorods (GNRs) have received much attention in photothermal therapeutics by virtue of enhanced NIR absorbance with increased cross-sections, tunable optical properties by adjusting aspect ratios, and facile preparation by well-established synthesis methods. However, the intrinsic problem of nanoparticles, the nanotoxicity, pose a question of photothermal therapy using nano-sized photothermal agents. Herein, we present a method encapsulating GNRs into PEG based microcubic polymer networks via stop flow lithography. This microcubes have two notable properties: (1) The microcubes can be implanted at a specific site with relatively large size maintaining similar optical properties and photothermal effects compared to bare GNRs. (2) GNRs can be immobilized in microcubes, preventing the potential toxicity of GNRs. Overall, In vivo experimental results support these properties of GNRs encapsulated microcubes.