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Labeling cells with fluorinated silicon nanoparticles for targeted ¹⁹F-MRI and Fluorescence Imaging**Yuqi Yang, Sha Li and Shizhen Chen**
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As a noninvasive molecular imaging modality, optical imaging provides high sensitivity and specificity but poor tissue penetration depth. On the contrary, MRI has high spatial resolution in deep tissue, but it suffers the drawbacks of low sensitivity. The combination of MRI and optical imaging, which takes advantages of both modalities, has received widespread attention in biological and medical application. Compared to conventional ¹H-MRI, ¹⁹F-MRI displays an intense sensitivity (0.83 relative to ¹H) and negligible background signal. Herein, we report a one-pot microwave synthesis of a functionalized ¹⁹F CA, fluorinated silicon nanoparticles (¹⁹F-SiNP), for targeted detection of A549 lung cancer cells. Moreover, based on the quantum effects of the nano-sized nanoparticles, the ¹⁹FSiNP can also act as a label free dye for ultracontrast fluorescent imaging. *In vitro* and *in vivo* results shows that the peptide-conjugated ¹⁹FSiNP can specifically detect A549 cells for dual ¹⁹F-MRI and fluorescence imaging. Such functionalized ¹⁹FSiNP can also be labeled to other cancer cells by replacing the targeting group, providing a handy and reliable way for targeted dual-model imaging.

Biography

Yuqi Yang received her PhD in 2015 from Central China Normal University, and then joined Wuhan Institute of Physics and Mathematics as an assistant professor. Dr. Yang's study focuses on multi-modality contrast agents, especially specializes in nanomaterial-based agents for molecular imaging of targeted cancer cells.

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