

Preparation of Conjugated Polymer Nanoparticles Bearing Acceptors for Photoacoustic Imaging Applications

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Photoacoustic imaging that utilizes local density fluctuation generated by thermal energy has advantages to detect objects deep in human body because of high image contrast. In this study, we incorporate an acceptor into conjugated polymer nanoparticles to enhance the quality of photoacoustic images. The conjugated polymer as a donor can absorb near infrared light that can be deeply penetrated into human body and the acceptor has a high thermal expansion coefficient. Thus in a combination of these donor and acceptor, the energy in the NIR region is absorbed by the conjugated polymer and efficiently transferred to the acceptor, thereby increasing thermal expansion of the nanomaterial. We demonstrate the fabrication process of nanoparticles and characterize the energy transfer in particles by using absorption and emission spectroscopy. (This work was funded by the Korea Research Foundation (2013R1A1A2058816))