

## Development of Polymer Nano-Particles as in vivo Imaging Agents for Photo-Acoustic Imaging

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**Abstract :** Molecular imaging has attracted much attention to visualize a tumor site in a living body on the basis of biological functions. A fluorescence in vivo imaging technique has been widely employed as a useful modality for small animals in pre-clinical researches. However, it is difficult to observe a site deep inside a body because of a short penetration depth of light. A photo-acoustic effect is a generation of a sound wave following light absorption. Because the sound wave is less susceptible to the absorption of tissues, an in vivo imaging method based on the photoacoustic effect can observe deep inside a living body. The current study developed an in vivo imaging agent for a photoacoustic imaging method. Nano-particles of poly(lactic acid) including indocyanine dye were developed as bio-compatible imaging agent with strong light absorption. A tumor site inside a mouse body was successfully observed in a photo-acoustic image. A photo-acoustic imaging with polymer nano-particle agent would be a powerful method to visualize a tumor.

**Keywords :** nano-particle, photo-acoustic effect, polymer, dye, in vivo imaging

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