

## **Optical imaging of pathology based on precisely designed fluorescence probes**

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Pathology imaging *in vivo* is one of the most active research fields, and several imaging modalities such as MRI, radionuclide including PET and fluorescence imaging techniques have been extensively investigated. All these modalities use appropriate contrast reagents which are composed of signalling agent and, for example, tumor-targeting molecules such as antibody, peptide, small-molecule ligands, or synthetic graft copolymer. One of the central problems associated with these conventional targeted imaging methods, however, is the fact that the signal contrast between lesion and surrounding tissues relies on the efficient targeting to the lesion and the rapid sequestration or excretion of unbound agent. Among these modalities, only fluorescence imaging technique has a significant feature, in that great signal amplification could be achieved which potentially leads to the selective imaging of pathology with higher lesion-to-background ratio. From this point of view, fluorescence imaging technique has great advantages for visualizing small lesion in the endoscopic examination and for the assistance in surgical operation. In this symposium, I will present some examples of fluorescence tumor imaging based on highly activatable strategies with using precisely designed novel fluorescence probes.