Synthesis and applications of radiolabeled products for molecular imaging study

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In recent years, radioisotope-labeled tracers have widely been applied to various biomedical research and clinical trials. Radiolabeled tracers and nuclear medical instruments such as PET and SPECT can facilitate highly sensitive, non-invasive and quantitative imaging study. Therefore, these molecular imaging tools provide early and accurate diagnosis of serious diseases including malignant tumors and Alzheimer’s disease. Moreover, radiolabeling methods have been used for the evaluation of toxic materials in living subjects and determination of environmental safety. This seminar mainly aims to present the following research themes. I also would like to talk about how synthetic organic/inorganic chemistry can be used as a key technology in the field of nuclear medicine and molecular imaging.

1. Bioorthogonal reactions for efficient radiolabeling of biomolecules

2. Development of radiopharmaceuticals for *in vivo* enzyme activity imaging

3. Biodistribution study of humidifier disinfectant, polyhexamethylene guanidine (PHMG)