



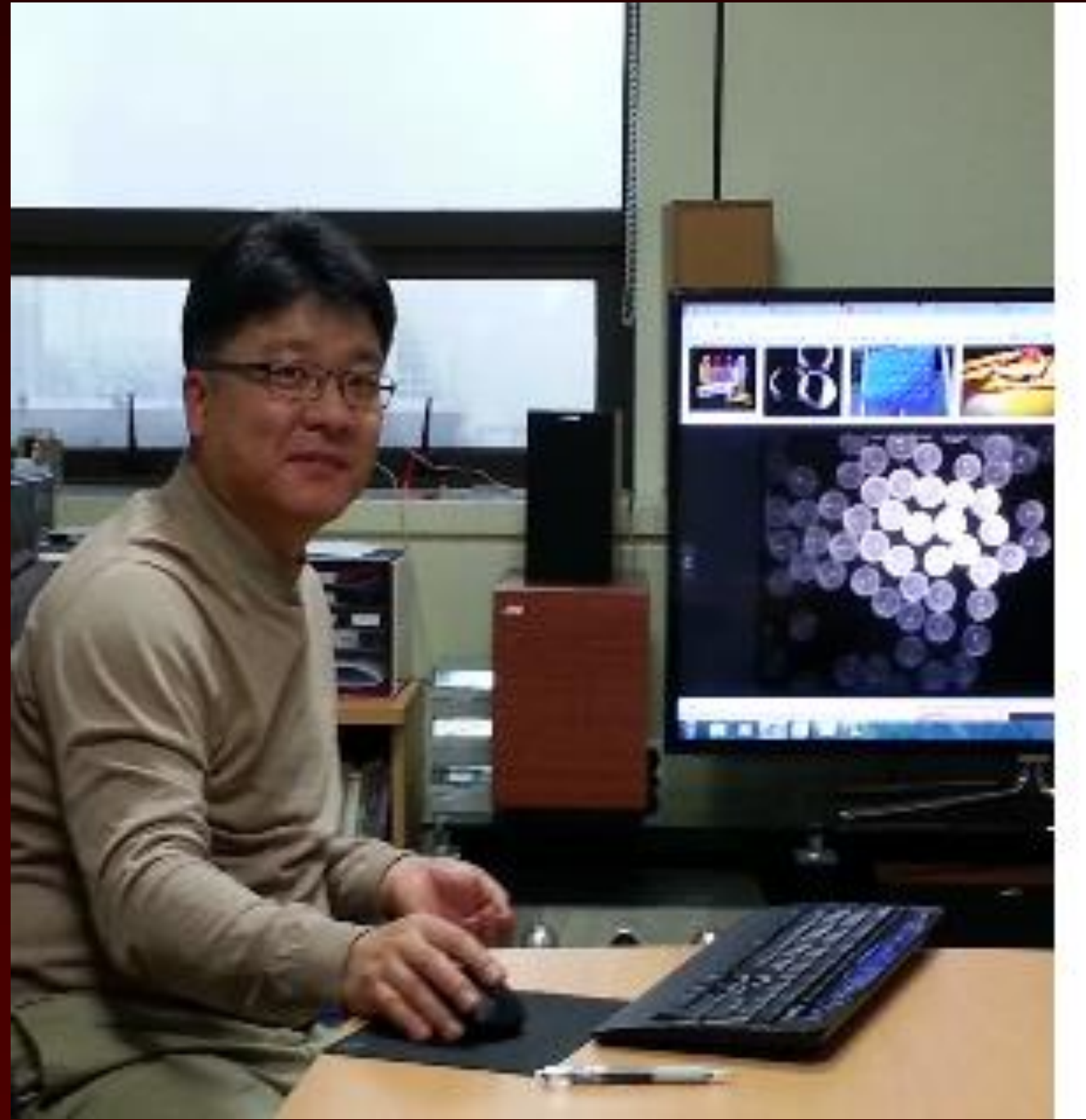
Biomedical Engineering Seminar Series

1st Semester, Academic Year 2015

Date: October 6, 2015

Time: 11.00-12.00 PM

**Room R-114, 1st level, Building 1,
Department of Biomedical Engineering,
Faculty of Engineering;
Mahidol University**



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“Image Guided & Targeted Cancer Therapy”

New functional drug delivery system have been developed for decades and now successfully applied to clinical fields. Particularly, imaging technology allows detection of pin-point size cancer, and we can approach cancerous tissue using the imaging technologies, such as MR, CT and PET. In this presentation, we will discuss about imaging-guided cancer treatment. The first topic is MR Imaging agent which can allows the most sensitive detection of cancer in the body. Iron oxide nanoparticles as a T2 contrast agent, decorated with integrin-targeting peptide, and T1 contrast agent, gadolinium chelated with macromolecular natural polymer, for liver imaging will be discussed. Additionally, hepatic cancer targeting doxorubicin eluting drug delivery system will be presented. Hepatic cancer targeting embolic particles were fabricated using capillary fluidic devices. Its drug eluting and embolic properties was tested on swine animal models. Now it is under the clinical development for the treatment of late-stage hepatic cancer. The third topic is drug-eluting gastrointestinal stents, especially used for the treatment of bile duct cancer. Our group designed photosensitizer-embedded self-expanding nonvascular metal stent (PDT-stent) which allows repeatable photodynamic treatment of cholangiocarcinoma. Photodynamic activity of PDT-stent was evaluated through laser exposure on stent-layered tumor cell lines, HCT-116 tumor- xenograft mouse models and endoscopic intervention of PDT-stent on bile duct of mini pigs. The PDT-stent after light exposure successfully generated cytotoxic singlet oxygen in the surrounding tissues, inducing apoptotic degradation of tumor cells and regression of xenograft tumors on mouse models.

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