PROJECT TITLE: Controlled Release of Drug using Light

Professor Yoonjee Park
Room 584 ERC
Department of Biomedical, Chemical, &
Environmental Engineering
Cincinnati, OH 45221-0012
Tel: (513) 556-1359
Email: parkye@ucmail.uc.edu

Project Description

Current efforts in the area of ocular drug delivery include frequent intravitreal injection, which is not only invasive and inconvenient for patients but also may increase the risk of complications. Therefore, development of stable drug delivery systems which have ability to be released in a controlled manner for a long-term is necessary.

This research project is about development of an implant which contains drug-encapsulating nanoparticles, which can be released on-demand. Drug inside the particle core can be released upon exposure to light because the nanoparticles are responsive to light. In addition, when the particles release drug, the particles undergo phase-transition to bubbles, which are ultrasound imaging contrast agents. This provides us quantitative analysis of how much drug is released using clinical ultrasound imaging systems. During the summer, you will have experience on developing polymer-based implants to contain nanoparticles and examining the characteristics to improve delivering properties of the nanoparticles.

Basic chemistry lab experience is required.