Graduate Seminar

Wednesday September 18, 3:00-4:00 p.m., WEB L012

Ultrasound Contrast Agents, 3D Printing and Eosinophilic Esophagitis

All are welcome to Professor Leonard Pease's presentation at the Chemical Engineering Graduate Seminar. The title is: "Ultrasound Contrast Agents, 3D Printing and Eosinophilic Esophagitis." The seminar will be from 3:00 to 4:00 p.m. on Wednesday September 18, in WEB L102. There will be light refreshments.

Abstract:
Esophageal diseases can be difficult to accurately diagnose due to heterogeneity in the distribution of diseased tissues. For example, eosinophilic esophagitis (EoE) is characterized by patchy invasion of eosinophils, a type of white blood cell. Currently, 5 to 8 biopsies are recommended for EoE diagnosis, and if even one is found to have accumulations of eosinophils, the patient is said to have EoE. However, this procedure is invasive and up to 20% of patients may be misdiagnosed due to the patchiness of eosinophil invasion. New diagnostic measures utilizing biomimetic ultrasound contrast enhancement agents may provide a more effective, patient-friendly and efficient way to diagnose EoE by signaling eosinophil concentrations throughout the esophagus. This talk highlights the development of this new class of clinically relevant ultrasound contrast agents, how our team has overcome challenges to their binding and transport (bolus transport time is only 6-15 s), and how 3D printed structures enhance contrast versus both air bubbles and adjacent tissue. These results suggest the potential of this new class of contrast agents to diagnose a broad range of gastrointestinal diseases.

Biography:
Professor Pease is a tenure-track faculty member in Chemical Engineering at the University of Utah. Dr. Pease specializes in advanced biomedical technologies and alternative fuels. He received a Ph.D. from Princeton University in Chemical and Materials Engineering before joining the University.