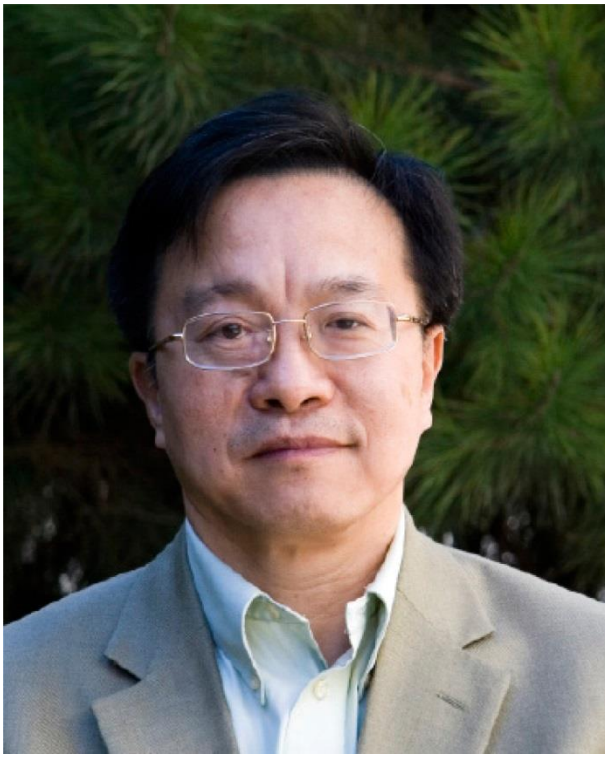
UNIVERSITY of HOUSTON | ENGINEERING

Department of Biomedical Engineering

Seminar

Biomolecular Engineering for Genome Editing and Nanomedicine

Friday, October 21, 2016
SEC 204: 12-1PM
Speaker: Dr. Gang Bao



Gang Bao
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Abstract: The integration of biomolecular engineering, nanotechnology and biology is expected to produce major breakthroughs in medical diagnostics and therapeutics. Due to the size-compatibility of nano-scale structures with proteins and nucleic acids, the design, optimization and application of nanoprobes, nanocarriers and molecular machines provide unprecedented opportunities for achieving a better control of biological processes, and drastic improvements in disease detection and therapy. Recent advances include the development of engineered nucleases and multi-functional nanoparticles for biological and medical applications.

In this talk I will present the design and optimization of CRISPR/Cas9 systems for treating single-gene disorders, and the development and application of multi-functional nanoparticles for molecular imaging, cell tracking and biomolecule detection. The opportunities and challenges in nanomedicine and therapeutic genome editing are also discussed.

Bio: Dr. Gang Bao is the Foyt Family Chair Professor in the Department of Bioengineering, Rice University. He is also Director of Nanomedicine Center for Nucleoprotein Machines, a NIH Nanomedicine Development Center (NDC) at Rice. Dr. Bao received his undergraduate and Master's degrees from Shandong University in China, and his PhD from Lehigh University in the US. Dr. Bao is a Fellow of the American Association of Advancement in Science (AAAS), a Fellow of the American Society of Mechanical Engineers (ASME), a Fellow of the American Physical Society (APS), and a Fellow of the American Institute for Medical and Biological Engineering (AIMBE).

Dr. Bao's current research is focused on the development of nanotechnology and biomolecular engineering tools for biological and disease studies, including molecular beacons, magnetic nanoparticle probes, quantum dot bioconjugates, protein tagging/targeting methods, and engineered nucleases. These approaches have been applied to the diagnosis and treatment of cardiovascular disease and cancer, and the development of gene correction approaches for treating single-gene disorders.