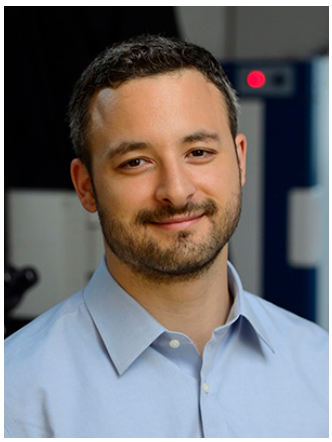
ELECTRICAL & COMPUTER ENGINEERING **BIO-SEMINAR** **Spring 2020** TEXAS A&M UNIVERSITY Engineering

When: **Friday 12:40 – 13:30, January 24, 2020**
Where: **ETB 1020**



Speaker: **Zachary Gagnon, Ph.D.**

Associate Professor
Department of Chemical Engineering
Texas A&M University

Title: **Engineering Nonlinear Electrokinetic Flows at Polarizable Interfaces**

Abstract: Electrokinetic phenomena involve the interaction between applied fields, ions, fluid flows, and particles. When combined with microfluidics, these force fields can produce new and exciting applications. Our lab is interested in understanding and exploiting the interaction between external fields and charged microfluidic surfaces and polarizable fluid interfaces. Recently, we have developed new ways to harness and engineer these flows to exhibit intelligent responsiveness to specific biomolecules. In this talk, I will present our experimental and theoretical findings on how aqueous liquid interfaces polarize and electrohydrodynamically respond to externally applied electric fields. We will show an experimental system we have developed to study and quantify these flows. We then describe a variety of ways to harnesses these interfacial flows for applications in biosensing, nanoemulsions, and biomolecule separation and concentration.

Bio: Zach Gagnon is an Associate Professor at Texas A&M University. He earned a B.S. degree in Chemical Engineering at the University of Massachusetts, Amherst, then earned his M.S and Ph.D. in Chemical Engineering at the University of Notre Dame with Hsueh-Chia Chang on problems in microfluidics and electrokinetics. He then spent two years as a Postdoctoral Fellow at the Johns Hopkins School of Medicine, where he worked in microfluidics and cell migration with Peter Devreotes. Gagnon is the recipient of an NSF CAREER Award and a NASA Early Career Faculty Award. His group focuses on electrokinetic processes that occur in microscale systems, both experimentally and theoretically. Specific areas of interest include dynamic polarization processes at microfluidic interfaces, dielectrophoresis, isotachophoresis, flows in micro-chemical environments, and biosensing for portable diagnostics.