

# Weekly CEAFM Seminar: Spring 2016



## JOHNS HOPKINS Center for Environmental & Applied Fluid Mechanics

Date: **Friday, April 15, 2016**  
Time: 11:00 AM  
Location: Gilman Hall # 50  
Speaker: **Prof. Bud Homsy (University of British Columbia)**  
Title: ***"Interfacial Fluid Mechanics: New Twists on an Old Subject"***

### Abstract

An interface in a fluid implies new forces associated with surface tension and surface tension gradients. The study of fluid flows driven by these forces has a long history in fluid mechanics, yet many fascinating, counter-intuitive, and unexpected phenomena continue to be discovered. This talk will discuss some classical results due to G.I. Taylor on viscous fingering, drop deformation and electrohydrodynamics, and will then focus on our recent work on related problems: (i) the effect of chemical reactions on fingering, (ii) spontaneous chemically driven tip-streaming of drops, (iii) chaotic advection driven by interfacial electrical stresses, and if time allows, (iv) enhanced heat and mass transport in chaotically stirred drops. All these phenomena will be illustrated through movies of experiments and simulations.

### Bio

G. M. "Bud" Homsy received his B.S. at UC Berkeley, his MS/PhD at the University of Illinois, and had a NATO Postdoctoral Fellowship at Imperial College, London. Professor Homsy joined Stanford's Chemical Engineering Department in Fall 1970, where he taught for 30 years before joining the faculty of Mechanical Engineering at UC Santa Barbara in 2001. He joined the Mathematics Department at the University of British Columbia in 2011 and served as Deputy Director of the Pacific Institute for the Mathematical Sciences until his retirement in 2013. He is currently an Affiliated Faculty at the University of Washington. His field of research is fluid mechanics and transport phenomena, and he has published over 150 papers in the lead journals in the field. Professor Homsy has held many professional positions, including Vice-Chair and Chair of the APS Division of Fluid Dynamics, two terms as Department Chair at Stanford, Department Chair at UCSB, Chairman of the Board of USRA, and Associate Editorships of SIAM J. Applied Math, Int. J. Multiphase Flow, Physics of Fluids, and Phys. Rev. Fluids. His honors include Fellow of the APS, Bing Fellow at Stanford, Talbot Lecturer at UIUC, Zebib Memorial Lecturer at Rutgers, Michael Abbott Visitor at RPI, David M. Mason Lecturer at Stanford, and the Batchelor Visitor at DAMTP, Cambridge. He received an honorary doctorate from Paul Sabatier University, Toulouse and the APS Fluid Dynamics Prize for 2004, and was elected to the US National Academy of Engineering in 2006 and to the Washington State Academy of Sciences in 2015.