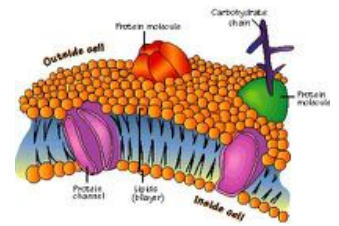


**SIAM**  
Society for Industrial and Applied Mathematics



# 12<sup>th</sup> Front Range Applied Mathematics (FRAM) Student Conference

**UNIVERSITY OF COLORADO - DENVER**

**SATURDAY, MARCH 5<sup>TH</sup>, 2016**

**SPONSORS: THE SIAM STUDENT CHAPTERS AT**  
University of Colorado: Boulder, Colorado Springs and Denver campuses  
Colorado School of Mines, Colorado State University, Colorado College, Univ. Wyoming

The Front Range SIAM Student Chapters are sponsoring the 12<sup>th</sup> Annual Applied Mathematics Regional Student Conference. This event allows students from all universities along the Front Range to learn about new developments in Applied Mathematics and promotes interest in the field. The conference is open to *both* undergraduate and graduate students.

## Registration Information

We are requesting a \$10 donation per person to help defray the cost of the breakfast and lunch that will be provided at the conference. To register before the day of the conference, please send the name of the conference attendee and their university affiliation along with a check made out to "CU Denver SIAM Student Chapter" to:

**Dr. Henricus Bouwmeester**  
Department of Mathematics and  
Statistical Sciences  
University of Colorado Denver  
1201 Larimer Street, 4th Floor  
Denver, CO 80204

## Call for Presentations

There will be 20-minute student presentations. A special MCM/ICM session will also be organized. Please send abstracts in LaTeX (.tex) or plain text (.txt) format to [FRAMSC.abstracts@gmail.com](mailto:FRAMSC.abstracts@gmail.com). For more info, please check the conference website or contact the organizers.

**Abstract submission deadline is Friday, Feb 26, 2016!**

## Plenary Speaker

**Dr. Chun Liu**  
Pennsylvania State University



**An Energetic Variational Approach for  
Ionic Fluids and Ion Channels**

The interactions of ions flowing through biological systems have been a central topic in biology for more than 100 years. Flows of ions produce signaling in the nervous system, initiation of contraction in muscle, coordinating the pumping of the heart and regulating the flow of water through kidney and intestine. Ion concentrations inside cells are controlled by ion channel proteins through the lipid membranes. In this talk, a continuum model is derived from the energetic variational approach, which include the coupling between the electrostatic forces, the hydrodynamics, diffusion and crowding (due to the finite size effects). The model provides some basic understanding of some important properties of proteins, such as the ion selectivity and sensor mechanism. Transport of charged particles and ions in biological environments is by nature a multiscale and multiphysics problem. I will also discuss the roles of other important ingredients such as those of general diffusion and also the connection between kinetic description and continuum approaches.

## Contact Information

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**Conference Website:** <http://goo.gl/emgYFD>

