

1116-VH-805 **Anastasia Bridner Wilson***, anastas@clemson.edu. *Protein Adsorption in Porous Membranes.*

Protein therapeutics have been widely used over the last 80 years as a treatment for various illnesses (e.g. diabetes, cancer, hemophilia, anemia, infectious diseases). The protein therapeutics market is expected to grow 15% annually through the next decade, and by 2016, 50% of the top 100 drugs will most likely be biologics, that is drugs derived from biotechnology. A high percentage (more than 60%) of the total cost in protein therapeutics is associated with the purification part of the separation; consequently modeling and optimization of the protein purification process could greatly decrease the cost of protein therapeutics.

In this presentation, we will discuss a method of protein separation using multi-modal porous membranes recently developed in Clemson University's chemical engineering department. We will present numerical simulations of the advection-diffusion-reaction equation which can be used to model these membranes. We will focus specifically on different models for protein adsorption. We will also present a brief analysis of the breakthrough curves obtained from the numerical simulations. (Received September 13, 2015)