SCHOOL OF CHEMICAL, BIOLOGICAL & MATERIALS ENGINEERING

And

UNIVERSITY OF OKLAHOMA BIOENGINEERING CENTER

100 E. Boyd, Sarkeys Energy Center, T-335
405-325-5811
The University of Oklahoma
Norman, Oklahoma

2009 – 2010 Seminar Series

DR. JASON E. BUTLER

ASSOCIATE PROFESSOR
DEPARTMENT OF CHEMICAL ENGINEERING
UNIVERSITY OF FLORIDA
GAINESVILLE, FLORIDA

Will present a seminar on

"DYNAMICS AND MIGRATION OF CONFINED POLYMERS DRIVEN BY SHEARING FLOWS AND ELECTROPHRESIS"

Polymers in dilute solution can experience a net migration across streamlines in bounded shear and pressure-driven flows. Though the origin, existence, and even direction of polymer migration were controversial, recent work has clarified that flexible polymers migrate away from bounding walls due to hydrodynamic interactions if `weakly' confined. For `highly' confined polymers, the hydrodynamic interactions are screened and the polymers migrate closer to the wall. I compare simulations of the phenomena to calculations from the kinetic theory of an elastic dumbbell to elucidate the origin of the behavior. The possibility of using the phenomena in conjunction with electrophoresis to control the distribution of, and possibly separate, polyelectrolytes is explored. The results of simulations and theory on this combined mechanism are in good agreement with one another, and in qualitative agreement with experimental observations. I also present both computational and theoretical investigations of the migration behavior for rigid, rod-like polymers.

THURSDAY, SEPTEMBER 24, 2009

COOKIES AND COFFEE -- 2:45 P.M.

SEMINAR -- 3:00 P.M.

SARKEYS ENERGY CENTER, ROOM M-204

THIS IS A REQUIRED SEMINAR FOR CHE 5971