Colliver, Terri L.

From: King, Donna W.
Sent: Friday, October 14, 2016 9:42 AM
To: CHEM ENG GRAD PROGRAMS
Subject: CBME seminar for Thurs., Oct. 20, 1:45 p.m., SEC M-204

CHEMICAL, BIOLOGICAL & MATERIALS ENGINEERING

100 E. Boyd, Sarkeys Energy Center, T-301
405-325-5811
The University of Oklahoma
Norman, Oklahoma

PHILLIPS 66 SEMINAR SERIES, 2016 – 2017

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DR. NICHOLAS M. BRIGGS

POST DOCTORAL RESEARCH ASSOCIATE
CBME, UNIVERSITY OF OKLAHOMA

"CARBON NANOTUBES AS CATALYST SUPPORTS IN BYPHASIC SYSTEMS"

Carbon nanotubes are studied as catalyst supports in biphasic (oil and water) systems. In the first part the relationships between a carbon nanotubes properties before and after functionalization and the influence those properties have on emulsions characteristics is studied. Emulsion characteristics studied were emulsion type, droplet size, interfacial area, and quantity of carbon nanotubes at the oil-water interface. Emulsions stabilized with carbon nanotubes are compared with emulsions stabilized with silica nanoparticles to further understand how material properties influence emulsion characteristics. The relationship between carbon nanotubes and silica nanoparticles properties and emulsion characteristics is utilized to control reaction selectivity, further understand the particles environment at the oil-water interface, and create a responsive system where reaction selectivity can be tuned as the reaction proceeds.

DR. QUOC T. NGUYEN

POST DOCTORAL RESEARCH ASSOCIATE
CBME, UNIVERSITY OF OKLAHOMA

"FLOW-INDUCED SEPARATION IN WALL TURBULENCE"

Study of turbulence has been carried out for several decades due to its popularity and importance in many engineering disciplines. In fact, turbulence is the most observed flow regime in nature and industry. However, despite all the efforts have been made, turbulence still remains to be an unsolved problem, both in physics and mathematics. Large coherent structures, extended range of length and time scales, and high irregularity have separated turbulence from laminar flow. One of the most studied phenomena in turbulence is mixing, where convection effects, combined with motion of three-dimensional flow structures, disperse a substance in a more efficient way than molecular diffusion does on its own. We present here an opposite case, in which combination of molecular diffusion and convection effect lead to separation of particles with significantly different diffusivities. Particles with different Schmidt numbers, hence different diffusivity values, are released from an instantaneous line source at the wall of a turbulent channel flow. Direct Numerical Simulation (DNS) and Lagrangian Scalar Tracking (LST) method are used to simulate turbulence and track motion of those particles. While turbulence would eventually take over and mixing would happen at long times, the main finding of this study is the existence of a very clear particle separation regime that lasts for a short period of time. This brings-to-light another phenomenon that has not been explored before, and could be used to separate very small particles or even macromolecules in dilute suspensions.

THURSDAY, OCTOBER 20, 2016
COOKIES AND COFFEE -- 1:30 P.M.
SEMINAR -- 1:45 P.M.
SARKEYS ENERGY CENTER, M-204

THIS IS A REQUIRED SEMINAR FOR CHE 5971

Accommodations on the basis of disability are available by contacting the office.