

Chemical Engineering Graduate Seminar



Dr. Peter Vekilov

University of Houston

3:30 – 4:30 PM

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CPE 2.218

“The Physical Chemistry Of Sickle Cell Anemia”

The primary pathogenic event of sickle cell anemia is the polymerization of the mutant hemoglobin (Hb) S within the red blood cells, occurring when HbS is in deoxy state in the venous circulation. Polymerization is known to start with nucleation of individual polymer fibers, followed by growth and branching via secondary nucleation, yet the mechanisms of nucleation of the primary fibers have never been subjected to dedicated tests. Nucleation is the only process in the sequence of phenomena that comprise the molecular biology, physical chemistry, and pathophysiology of the disease whose rate is an exponential function of the system parameters and as such is the easiest to suppress.