CMET/MSEG Seminar

UNIVERSITY OF DELAWARE

DATE:

August 5, 2016

TIME:

11:00 a.m.

LOCATION:

366 CLB

Dr. Charles C. Han

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Institute of Chemistry

Chinese Academy of Sciences, Beijing, China

Dr. Han received his B.S. degree in Chemical Engineering from the National Taiwan University in 1966. He received his master's degree in Physical Chemistry from the University of Houston in 1969, and his Ph.D. degree in Physical Chemistry from the University of Wisconsin, Madison in 1973. He joined the National Bureau of Standards (changed to National Institute of Standards and Technology) in 1974 as a research scientist, then group leader for the polymer blends group and later the multiphase materials group. He was elected as the NIST fellow in 1995. He joined the Institute of Chemistry, the Chinese Academy of Sciences in 2002 as the chief scientist and the director for the joint laboratory of polymer science and materials. His research interests include light scattering, dynamic light scattering, small angle neutron scattering and small angle X-ray scattering in polymer research, order-disorder transition and pattern formation of block copolymers, equilibrium phase behavior and kinetics of spinodal decomposition of polymer mixtures and crystallization behaviors, shear dependence of the static and kinetic phase behavior of polymer mixtures and its application in polymer processing, and more recently on the in-reactor alloying of polyolefins with compound catalyst. He has won many awards and prizes, include Dillon Medal of American Physical Society, Humboldt Senior Research Award from Alexander von Humboldt Foundation, the High Polymer Physics Prize, American Physical Society, and the International Award of The Society of Polymers, Japan. He has published more than 360 research papers, and authored or co-authored 27 books, with an H-factor of 46. He also has more than 30 US and/or Chinese patents which have been approved or disclosed.

"From Aggregation, Gelation to Glass Transition of a Colloidal/polymer System"

Charles C. Han, Guangcui Yuan and He Cheng
Joint Laboratory of Polymer Science and Materials, ICCAS, Beijing, China
and **Institute for Advanced Study, Shenzhen University, Shenzhen, China**

Aggregation and gelation behavior of mixed suspensions of polystyrene microspheres and poly(N-isopropylacrylamide) microgels have been studied. In dilute microsphere suspensions, with increasing concentration of microgel (MG), microspheres (MS) first aggregated with each other through the bridging of the microgels, then dispersed individually when saturated adsorption was achieved, and finally depletion clusters formed at even higher concentrations of microgel. In concentrated microsphere suspensions, with saturated MG adsorption, a state transition from attractive glass to repulsive glass can be observed. This type of system can be viewed as a molecular model system which has a long range repulsive interaction potential and a short range attractive potential. A comparison between the glass transition of the colloidal systems and the glass transition of polymeric systems can be made.