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. PETRA PÖTSCHKE

DEPARTMENT OF POLYMER REACTIONS AND BLENDS LEIBNIZ INSTITUTE OF POLYMER RESEARCH DRESDEN (GERMANY) DRESDEN, GERMANY

Will present a seminar on

"RESEARCH ON COMPOSITES CONTAINING CARBON NANOTUBES AT THE LEIBNIZ INSTITUTE OF POLYMER RESEARCH DRESDEN (GERMANY)"

The Leibniz Institute of Polymer Research Dresden (IPF) is one of the largest polymer research facilities in Germany. As an institute of the Leibniz Association, the IPF is committed to carrying out application-oriented basic research and receives its base funding in equal parts from the federal and state governments. In 2009, a regular budget of EUR 17.5 million was provided. In addition, the institute acquires third party funds through project and industrial contracts which amounted in 2009 to EUR 6.9 million. By December 31, 2009, the IPF had a total of 463 employees. The focus of activities at the IPF is directed toward the advancement of basic scientific knowledge for the development of functional polymer materials and polymer materials with new or improved characteristics. In addition, emphasis is also put on combining material development with innovative and sustainable production and processing technologies. The combination of competences in natural and engineering sciences, for which the IPF is known, as well as state-of-the-art technical equipment, allows a holistic approach to material science research. This extends from synthesis and modification of polymer materials to characterization, theoretical penetration, processing, and testing to controlling characteristics of polymer materials, biomaterials, and composites by selective interface design.

The working group "Composites and blends with carbon nanoparticles" within the Subinstitute of Chemistry has been formed starting in 2001 and has at the moment 11 coworkers, all sponsored by third party projects. The focus is on incorporation of carbon nanotubes (CNT) in thermoplastic polymer melts and the investigation of parameters influencing nanotube dispersion and composite properties. Mainly electrical properties are regarded, but also mechanical enhancement, rheological properties, crystallization behavior, flame retardancy, and others. In addition, nanotube agglomerate dispersion mechanisms were investigated in a kinetic study using a small scale mixer. However, also the influences using laboratory extruders were studied by varying throughput, mixing speed, temperature profile and screw design. For injection molding the influences of main parameters on electrical properties were investigated using a factorial design. Most of the studies were performed on polycarbonate, but also on polyamides, thermoplastic polyurethanes, polypropylene, polylactic acid or polycaprolactone. In addition, polymer blends filled with CNT are in the focus of investigations.

TUESDAY, MAY 25, 2010 COOKIES AND COFFEE -- 3:00 P.M. SEMINAR -- 3:15 P.M. SARKEYS ENERGY CENTER, ROOM M-204