The New Z-N Catalyst Frontier for PP
Post-Doc Proposal – Specialty Catalyst Business

About Grace
Grace is a leading global supplier of catalysts, engineered and packaging materials, and specialty construction chemicals and building materials. The company's three industry-leading business segments, Grace Catalysts Technologies, Grace Materials Technologies and Grace Construction Products, provide innovative products, technologies, and services that enhance the quality of life. Grace employs approximately 6,500 people in over 40 countries and had 2012 net sales of $3.2 billion. More information about Grace is available at www.grace.com.

Project Scope
The Grace Specialty Catalyst R&D team has recently commercialized the 6th generation non-phthalate polypropylene (PP) Ziegler-Natta (Z-N) catalyst technology that enables production of a wide variety of PP products in different process platforms. This post-doc position will be focusing on material science aspects of PP products for Biaxially Oriented PP (BOPP) and high Melt Flow Rate (MFR) Injection Molding Impact copolymer PP (ICP). The goal will be to establish molecular architecture-property relationships for PP materials produced with 6th generation catalyst technology for these two application spaces including application related data. The research work includes:

1. Design of experiments to map the property space and correlate molecular architecture and performance properties. The post-doc person will have to work with the process R&D team to produce PP prototypes in the pilot plant and with the Product R&D team to formulate these samples for the application spaces identified
2. Measure performance properties of formulated samples and establish molecular architecture-performance properties correlations
3. Establish mathematical models to explain performance properties as a function of molecular properties
4. Make side-to-side application comparisons (film and injection molding) between prototypes based on 6th generation catalyst technology and other catalyst chemistries
5. Report findings.

Candidate Skill Set and Knowledge
A. Strong knowledge of polymer and material science. Working knowledge of polymer melts and mixing of viscous materials as well as fabrication technology
B. Passion for problem solving
C. Working knowledge of modeling techniques
D. Excellent organizational skills
E. Ability to work on complex spaces and to connect different technology elements from catalyst science to process know-how to PP product performance
F. Independent and pro-active
G. Passion for learning and teaching
H. Ability to work with diverse research and business teams
I. Excellent inter-personal skills to build cooperation bridges for optimum use of resources
J. Fluency in mandarin would be considered a plus.

Location
This post-doc position will be located at the Grace R&D center in Columbia (MD).

Grace is a long-time member of the Maryland business community, dating back to the 1800s. Currently, the state is home to the headquarters for Grace and research facilities.

The Grace corporate headquarters is located in Columbia on 166 acres. The site was developed in 1958 as a major research facility, one of the largest in the Washington, DC area. In 1999, the site's uses expanded to include the corporate headquarters, relocated from Boca Raton, Florida. Currently, there are 511 employees in Columbia.