

# SFB 608

## Einladung zum Sonderkolloquium

- Ort:** Universität zu Köln  
Hörsaal III der Physikalischen Institute
- Zeit:** Donnerstag, den 16. Juni 2005, 14 Uhr c.t.
- Sprecher:** Prof. Don-Kyun Seo  
Department of Chemistry & Biochemistry  
Arizona State University, USA
- Thema:** Magnetism and Chemical Bonding in *p*-Metal-Rich  
Transition-Metal Intermetallics:  
Spin Polarization vs. Metallic Bonding

Chemical understanding of magnetism in transition-metal intermetallics is challenging because of delocalisation of *d*-electrons and complicated bonding pictures in the compounds. Unlike the case of magnetic semiconductors and insulators, the formal electron-counting scheme is not generally applicable due to the extensive metal-metal bonds that blur the boundary between valence and conduction bands. The effect of chemical bonding on magnetism is particularly striking among the *p*-metal-rich transition-metal intermetallics in which the spin polarization is not favoured by bonding optimisation in the structures, according to the Stoner theory of metallic ferromagnetism. Based on our recent experimental and theoretical work, the presentation will examine the validity of the Stoner theory and discuss the structure-magnetism correlations in the intermetallics such as  $\text{Mn}_{14}\text{Al}_{56+x}\text{Ge}_{3-x}$  ( $x = 0 - 0.6$ ),  $\text{Mn}_2\text{Ga}_5$ , and  $\text{Gd}_2\text{MnGa}_6$ , and  $\text{PrMnSi}_2$ .

Gez. Prof. G. Meyer