

# Colloquium on Solid-State Physics

**Date:** Wednesday, March 6, 2013  
**Time:** 17:15h  
**Place:** Hörsaal HS 3  
Physik - Department  
Technische Universität München



**Seminar of the Collaborative Research Centre/Transregio TRR 80:**

## **Shape Memory and Martensitic Phase Transformation: The Understood Role of Phonons**

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Shape memory materials have the remarkable property of remembering their original shape after they have been deformed, and then reheated through the martensitic phase transformation temperature. By performing inelastic neutron scattering experiments we can study the temperature dependent behavior of the phonons in these materials. A particular phonon branch exhibits a strong temperature dependence, which is the 'roadmap' of the physics of the transformation. These studies, coupled with first principles calculations of the lattice dynamics, provide convincing evidence that strong electron-phonon coupling is the driving mechanism of the martensitic phase transformation.