

Special Seminar of TRR 80

Date: Tuesday, July 2, 2013
Time: 11:45 h
Place: PH 2224
Physik - Department
Technische Universität München



Seminar of the Collaborative Research Centre/Transregio TRR 80:

Neutron Reflectometry in the Specular and Off-specular Mode at DHRUVA Reactor

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The DHRUVA reactor at Trombay, Mumbai, India is the only research reactor in India available for condensed matter research using neutron scattering. There are 12 instruments available for elastic and inelastic neutron scattering experiments, including 4 instruments in a neutron guide hall. These instruments are available to the researchers in India as National Facility for Neutron Beam Research (NFNBR). We have established a Polarized Neutron Reflectometer (PNR) in the guide hall for characterizing vertically mounted samples. This instrument uses a ^3He PSD for neutron detection though working in step-scanning mode. This configuration allows us to carry out specular as well as off-specular neutron reflectometry on samples of interest, albeit on a medium intensity source. Interface magnetism in many magnetic/non-magnetic multilayer materials have been studied using this reflectometer. We use a combination of neutron and x-ray reflectometry routinely for determining alloy compositions at interfaces of metallic multilayers e.g. Ni/Ti, Ni/Al etc. We have also carried out off-specular neutron reflectometry on this instrument to determine the morphology of interfaces. In an interesting study, using polarized off-specular reflectometry, we have shown that the morphology of a buried magnetic interface is different from the chemical interface above it. Some of these results will be discussed along with a general overview to the experimental facilities at DHRUVA.