MM 7: HV Hofmann

Time: Monday 14:00–14:30 Location: IFW A

Invited Talk MM 7.1 Mon 14:00 IFW A

Non-destructive residual stress analysis with neutrons — •Michael Hofmann — FRM II, TU München, Garching, Germany

The measurement and analysis of residual stresses has gained significant importance over the past couple of years due to the increasing demands in improving the properties of new engineering materials and components. The ability to measure these residual stresses accurately will thus lead to the manufacture of stronger, lighter and cheaper components by industry. The drive to optimise material performance whilst minimising component weight will ensure that this field continues to grow. Experimentally, non-destructive analysis of phase specific residual stresses is only possible by means of diffraction methods. While X-ray scattering is essentially a surface method, the high penetration depth of neutrons into the bulk material (e.g. 20 mm into steel or 100 mm into aluminium) allows to extract reliable information from within components. In future, neutron scattering will gain further importance for strain measurements as new dedicated neutron diffractometers with advanced neutron optics become available. These will allow the utilization of the full potential of the technique and will help to establish neutron stress analysis as a routine method for industry.