

GERHARD KREXNER, CV

- 1951 Born in Vienna, Austria
- 1969 – 73 Studies of Physics, Mathematics, and Economics, University of Vienna and Vienna University of Economics
- 1973 – 77 Thesis in Nuclear Physics ('Parity mixing in heavy nuclei tested with beta-gamma angular correlation') at the Austrian Research Centre Seibersdorf (with distinction)
- Habilitation (Experimental Physics), University of Vienna

PROFESSIONAL EXPERIENCE

- 1973 – 1980 Participation in several research projects related to social psychology with focus on experimental design and data evaluation
- 1975 – 1985 Collaboration in various industrial projects on solar energy, automation of machinery, and space research with focus on programming, data acquisition and testing
- 1978 – present Affiliation to the Institute of Experimental Physics and later the Faculty of Physics at the University of Vienna, present position: Associate Professor
- 1980 Entering the fields of Condensed Matter Physics and Neutron Scattering
- 1986 – 1997 Set-up and running of a laboratory for positron annihilation
- 1997 – 2003 Project leader in the cooperation between the Austrian Academy of Sciences and the Laboratoire Léon Brillouin (LLB) at Saclay (France) operating the Austrian neutron three-axes spectrometer VALSE
- 2006 – present Spokesperson of the research group 'Physics of Functional Materials' (formerly 'Nonlinear Physics in Condensed Matter')

Stays abroad: More than 4 years at numerous research centres and universities, e.g.: Research Center Risø, MPI for Solid State Physics Stuttgart and MPI for Metal Physics Stuttgart, LLB Saclay, TU Munich, ILL Grenoble, CEN Grenoble, FZ Karlsruhe, FZ Jülich, BWU Munich, HMI Berlin, BNC Budapest, CEMES Toulouse, ESRF Grenoble, ISIS-RAL England, PSI Villigen (Switzerland), Synchrotron BESSY Berlin, Sincrotrone Elettra Trieste (Italy), Synchrotron Soleil Saclay (France)

Projects: Project leader or co-proposer in about 20 projects with the Austrian Science Fund (FWF), Austrian Academy of Sciences (OeAW), Austrian Research Promotion Agency (FFG). Research Fund of the Austrian National Bank, Research programs of the EU and bilateral international cooperations.

Investigations in the context of various contracts with industry (composition and properties of novel steel grades, sintering of refractory metals and ceramics, alloys for nuclear fusion reactors).

Over 80 publications in peer-reviewed journals.

Numerous contributions and talks at international conferences.

SCIENTIFIC INTERESTS

neutron holography, metal-hydrogen systems, tritium-induced lattice damage, multiferroics, martensitic phase transitions, phase transitions in confined geometries, intermetallic compounds, sintering, carbon-based novel materials (fullerenes, nanotubes), anharmonic effects in lattice dynamics, nanostructures, novel techniques in positron annihilation, elastomer-carbon nanocomposites, nanoporous glasses, hydrogen storage

EXPERIMENTAL METHODS / EQUIPMENT

Neutron scattering: elastic diffuse scattering, inelastic scattering, small-angle scattering

Neutron holography (cooperation)

Positron annihilation: Life time, Doppler broadening, Doppler coincidence, perfect crystal measurements of longitudinal Doppler shifts

Synchrotron radiation: 3D X-ray diffraction microscopy (cooperation)

High-pressure cells for neutron scattering and synchrotron radiation (cooperation)

Prompt gamma activation analysis (cooperation)

Preparation of metal hydrides, deuterides, tritides (cooperation)

PROFESSIONAL ACTIVITIES

Member of the Austrian Physical Society

Member of the American Physical Society

Delegate to the Scientific Advisory Council of the Budapest Neutron Centre BNC (since 1997)

Member of the Comité de sélection 'Systèmes désordonnés, Matériaux' at the Laboratoire Léon Brillouin (LLB) (1998-2002)

Referee for various scientific journals (Phys.Rev.Lett., Phys.Rev.B, etc.)

Co-organizer and lecturer at the biennial Winter Schools on Neutron and Synchrotron Radiation, Plannersalm and Altaussee, Austria, since 1999

Lecturer at the biennial Central European Training School on Neutron Beam Experiments, Budapest, since 2001

Repeated excursions with graduate students and post-docs (altogether about 40 to date) to the Budapest Neutron Centre providing introductory hands-on training at various neutron spectrometers

Head of the Section 'Research with Neutrons and Synchrotron Radiation' (NESY) of the Austrian Physical Society (2004-2006, 2015-2017)

(Vice-)Chairman of the ILL Advisory Board of the Austrian Academy of Sciences (from 2005 and 2010, respectively)

Delegate of the Central European Neutron Initiative ('CENI' cooperation between A, CZ, H, SK) to the ILL Steering Committee (from 2010)

Organizer of the Austrian-French workshop "Colloque austro-français sur l'étude des structures atomiques locales par diffusion neutronique", July 2004, LLB Saclay, France

Co-organizer of the First International Workshop on "Neutron Holography", Nov 2005, BNC Budapest, Hungary

Co-organizer of the Tutorial and Discussion Meeting „Multiscale Phenomena in Materials“, Sept 2008, Univ Vienna, Austria

Member of the Program Committee of the German Neutron Scattering Conference
2008, Sept 2008, TU München (D)

INTERNATIONAL COOPERATIONS (recent)

LLB Saclay, France (high-pressure cells)

CNRS Thiais, France (metal-hydrogen systems)

CEA Valduc, France (lattice damage in metal-tritium systems)

Ecole Polytechnique, Palaiseau, France (Nano-size colloids forming during electron irradiation)

ESRF Grenoble, France (martensitic phase transitions)

ILL Grenoble, France (high-precision measurements of electronic momentum distributions with positron annihilation)

Univ. Amiens, France (multiferroics)

BNC Budapest, Hungary (neutron holography)

Riga Technical University, Latvia (elastomer-carbon nanocomposites)