About Peter Grünberg

The Nobel Committee jointly awarded the Nobel Prize in Physics 2007 to the Jülich researcher Peter Grünberg and his colleague Albert Fert from the University of Paris-Sud.

The solid-state physicists were honoured for their discovery of the giant magnetoresistance (GMR) effect. The GMR effect led to a breakthrough in gigabyte hard disks and laid the foundation for the field of spintronics. In particular, after the implementation of the GMR effect in read heads in 1997, less than ten years after the discovery, the annual increase in the storage density of hard discs rose from 60 percent to almost 100 percent.

The GMR effect enables data to be read out very precisely. Sensors that make use of the GMR effect register tiny differences in magnetization with extreme sensitivity. In addition to the technological impact, the discovery of the GMR effect created an entirely new research area known as spintronics. Spintronics strives to exploit the quantum mechanical properties of the electron spin and electron charge on an equal footing for future applications in microelectronics and nanoelectronics.

Advancing fundamental research to pave the way for novel technological concepts in information technology – this motto encapsulates the work of Peter Grünberg. It is also the guiding principle of the Peter Grünberg Institute.

Curriculum Vitae

Name: Grünberg, Peter A.

Date and place of birth: May 18, 1939 Pilsen (now Czechia)

Nationality: German

Education

Diploma in physics: Technical University at Darmstadt, Germany, 1966
Ph.D: Technical University at Darmstadt, Germany 1969
Habilitation: University of Cologne, Germany 1984

Career/Employment

Postdoctoral fellow at Carleton University, Ottawa Canada 1969– 1972
Research scientist, IFF-Forschungszentrum Juelich, Germany from 1972
Habilitation and lecturer, University of Cologne, from 1984
Title of "ausserplanmässiger Professor" awarded at University of Cologne 1992
Visiting scientist at Argonne National Laboratories, USA, 1984–1985
Visiting professor: IMR at Tohoku University, Sendai, Japan
and JRCAT, Tsukuba Research Center, Japan 1998

Specialization Main field: magnetism
Other fields: materials research, thin films
Current research interests: spintronics in layered magnetic structures

Honours, Awards, Members of Professional Societies

1994 APS International Prize for New Materials, together with A. Fert und S.S.P. Parkin

1994 IUPAP Magnetism Award, together with A. Fert

1996 "Technologiepreis", Verein der Freunde und Förderer des Forschungszentrums Jülich

1997 Hewlett Packard Europhysics Prize, together with A. Fert und S.S.P. Parkin

1998 "Deutscher Zukunftspreis": price of the president of the German Federal Republic for innovation and advancement of technology

2002 Award of the title of a "honorary doctor" (Dr.rer.nat.h.c.) by the Faculty for Physics and Astronomy at the University of Bochum, Germany

2003 Membership at the Max Planck Society as external member of the "Max-Planck-Institut für Mikrostrukturphysik" in Halle/Saale, Germany

2004 "Manfred-von-Ardenne Preis 2004 für Angewandte Physik" by the EFDS (European Society of Thin Films), Dresden, Germany

2006 "European Inventor of the Year 2006" in the category Universities and Research Institutions", European Patent Office

2006 "Stern-Gerlach-Medaille" of the German Physical Society

2007 Japan-Prize of the Science and Technology Foundation of Japan, together with A. Fert

2007 Wolf-Foundation Prize in Physics, together with A. Fert, Israel

2007 Nobel Prize in Physics, together with A. Fert

2007 Helmholtz Professorship

2007 Honorary Doctorate, RWTH Aachen University

2008 Cross of the Order of Merit of the Federal Republic of Germany

2008 Honorary Doctorate, Faculty of Mathematics and Natural Science, University of Cologne

2008 Honorary Doctorate, Saarland University

2008 Freeman of the City Jülich

2008 Freeman of the City Lauterbach

2008 Order of Merit of the German federal state of North Rhine-Westphalia

2008 Honory doctorate, Gebze Institute of Technology, Turkey

2008 Minerva-Preis, Förderverein Museum Jülich

2009 Honory doctorate, University of Athens, Greece

2011 Verleihung der Ehrenmitgliedschaft der Deutschen Physikalischen Gesellschaft (DPG)

Until February 1999 I was a research assistant in the Condensed Matter Division of the Institute of Physics at the University of Basel from where I obtained my habilitation in January 1999. Details of my Basel research projects and a description of the employed lab equipment as well as some results and publications can be found on the Nanolab home page.