



# Participant Profile

for the  
**Turkish-German Strategy Workshop 2006**  
**TÜBİTAK Marmara Research Center,**  
**Istanbul- Gebze Turkey**  
**13 – 15 December 2006**



International Bureau (IB)  
of the Federal Ministry of  
Education and Research  
(BMBF)

## 1. Contact details and personal information

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<b>Department:</b>	Experimental Physics	<b>Website:</b>	
<b>Address:</b>	Lotharstr. 1	<b>Organisation type<sup>2</sup>:</b>	University
<b>Postcode and City:</b>	47048 Duisburg		

<sup>1</sup> **Role/function** e.g. working group leader, managing director, postdoc, PhD etc.

<sup>2</sup> **Organisation type** e.g. university, research institution, small and medium enterprise (SME), industry etc.

<b>Working Group:</b>	<input checked="" type="checkbox"/> 1 Material Technologies <input type="checkbox"/> 2 Biotechnology, Genomics and Food <input type="checkbox"/> 3 Energy <input type="checkbox"/> 4 Information and Communication Technologies <input type="checkbox"/> 5 Environmental Protection, Climate Change and Sustainable Development
<b>Areas of activity:</b>	<input checked="" type="checkbox"/> research <input type="checkbox"/> technology development <input type="checkbox"/> demonstration <input type="checkbox"/> training <input type="checkbox"/> dissemination <input type="checkbox"/> other:
<b>Keywords characterising your area of research:</b>	<p><b>Please choose the appropriate key words (max. 5) from the following list:</b>  <a href="http://www.cordis.lu/fp6/keywords">http://www.cordis.lu/fp6/keywords</a>  <b>04.06.02.02.00.00.00, 04.06.16.00.00.00.00, 04.06.07.00.00.00.00</b></p>
<b>Expertise, technologies and infrastructures available in your institution:</b>	<p><b>Research activities / expertise:</b> structural and magnetic properties of materials</p> <p><b>Methods:</b> experimental techniques related to the study of thermodynamic properties, investigation of structural and magnetic properties using synchrotron radiation and neutron scattering techniques, sample preparation and characterization at bulk and nanoscale. Laboratory X-ray techniques. High pressure techniques.</p> <p><b>Key technologies:</b> magnetic shape memory, magnetic refrigeration, magnetic and structural properties at the nanoscale.</p> <p><b>Infrastructures:</b> Sample preparation and characterization of bulk materials. Gas phase synthesis of magnetic nanoparticles. Magnetometry (1.5 K &lt; T &lt; 1000 K max. 5 T), Thermal expansion/magnetostriction (1.5 &lt; T &lt; 1000 K max 5 T). X-ray diffractometry.</p> <p><b>Key publications:</b>  <i>Enhanced orbital magnetism in Fe<sub>50</sub>Pt<sub>50</sub> nanoparticles</i>  C. Antoniak, J. Lindner, M. Spasova, D. Sudfeld, M. Acet, M. Farle, K. Fauth, U. Wiedwald, H.-G. Boyen, P. Ziemann, F. Wilhelm, A. Rogalev, Shouheng Sun, <i>Phys. Rev. Lett.</i> 97, 117201 (2006).   <i>Ferromagnetism in the austenitic and martensitic states of Ni-Mn-In alloys</i>  T. Krenke, M. Acet, E.F. Wassermann, X. Moya, L.I. Mañosa, and A. Planes, <i>Phys. Rev. B</i> 73, 174413 (2006).   <i>Inverse magnetocaloric effect in ferromagnetic Ni-Mn-Sn alloys</i>  T. Krenke, E. Duman, M. Acet, E.F. Wassermann, X. Moya, L. Mañosa, A. Planes <i>Nature Materials</i> 4, 450 (2005)</p>



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*Magnetic Instabilities in Fe<sub>3</sub>C Cementite Particles Observed with Fe K-Edge X-Ray Circular Dichroism under Pressure*

E. Duman, M. Acet, E. F. Wassermann, J. P. Itié, F. Baudelet, O. Mathon, and S. Pascarelli

*Phys. Rev. Lett. 94, 075502 (2005).*

*Martensitic transitions and the nature of ferromagnetism in the austenitic and martensitic states of Ni-Mn-Sn alloys*

T. Krenke, M. Acet, E.F. Wassermann, X. Moya, Ll. Mañosa, and A. Planes

*Phys. Rev. B 72, 014412 (2005).*

*Structural transitions of lipid monolayers on metallic nanoparticles*

A. Terheiden, B. Rellinghaus, M. Acet, and C. Mayer

*Phase transitions 78, 25 (2005).*

*Formation of extended ordered monolayers of FePt nanoparticles*

M. Acet, Christian Mayer, Oliver Muth, Annegret Terheiden, and Gerald Dyker  
*Journal of Crystal Growth 285, 365 (2005).*



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## 2. Past and present research collaborations

Are you familiar  
with the European  
Framework  
Programme?

Yes  No

- with Framework Programme 5
- with Framework Programme 6
- with Framework Programme 7

EU-projects you are  
involved in:  
Past projects

Programme title / contract number / title / acronym / your function  
(coordinator / partner / contractor)

Present projects

Other international  
collaborations:

Ankara University, Dept. of Engineering Physics  
University of Barcelona, Dept. of Material Research

Name(s) and  
contact details of  
potential partners:

**If you would like to suggest the participation of particular partners from the partner country based on existing contacts or collaboration experience, you are welcome to indicate their names and contact details below:**

Prof. Dr. Yalçın Elerman, Ankara University  
Prof. Dr. Yıldırhan Öner, Istanbul Technical University  
Prof. Dr. Ali Kalkanlı, Middle East Technical University

## 3. Presentation at the Workshop

I will give a presentation at the workshop (approx. 10 min.) to present my institution, my expertise, and my collaboration interests. The contents of my presentations is summarised below (max. 1 page).

Our research focuses presently on two topics. The first is related to magnetism and structural stability in intermetallic nanoparticles obtained from gas phase condensation. Here we examine the subtleties associated with crystallographic structures occurring in magnetic metallic nanoparticles which can be different from the thermodynamically stable crystal structure of the corresponding bulk. Our second interest is on magnetic field induced structural modifications and inverse magnetocaloric effects in Heusler and rare earth based systems. This topic is presently the theme of a priority program (Schwerpunktprogramm SPP1239) funded by the Deutsche Forschungsgemeinschaft. Here, we investigate structural and magnetic transitions and their relationship to the magnetic shape memory and magnetocaloric effects. With magnetic shape memory it is possible to attain magnetic field induced strains in the order of 10%. With the same material giant magnetocaloric effects, especially around room temperature, are also observed, yielding these materials as prospective cryogen-free and gas-free coolant elements.

**I agree with the publication of my data on the Workshop website!**

**PLEASE FILL IN THIS FORM UNTIL 22 SEPT. 2006 AND RETURN IT TO:**

Internationales Buero des BMBF  
[s.krummacher@fz-juelich.de](mailto:s.krummacher@fz-juelich.de);

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