The Head of the Departmet: Prof. Henryk Paul, Ph.D., D.Sc.

Scientific Staff

Magdalena Miszczyk, Ph.D

Piotr Bobrowski, Ph.D

Paweł Petrzak, M.Sc

Ph.D. students

Research Area

· **The influence of deformation on material properties of nanomaterials produced by severe plastic deformation methods** (H. Paul)

Analysis of hardening behavior and mechanical properties of Al and Al-alloys deformed in ECAP (H. Paul, A. Piątkowski, M. Kurowski, A. Tarasek, W. Wajda, M. Bijak).

Investigations of acoustic emission and strain mechanisms in nanocrystalline metals, alloys and composites subjected to channel-die tests before and after pre-deformation by intensive strain methods of ECAP, HPT and ARB (A. Pawełek, A. Piątkowski, J. Bogucka).

· **Role of grain boundaries and second phase particles in nucleation during recrystallization** (H. Paul)

The influence of grain boundaries and particle stimulated nucleation on texture changes during recrystallization of pure aluminium and Al-Mn-Mg alloy (H. Paul, A. Piątkowski, W. Wajda, M. Bijak).

Research Projects from Ministry of Science and Higher Education
Individual projects

· A. Pawełek - Application of acoustic methods to evaluation of mechanical properties of ultra-fine grained alloys, composites and ceramics materials, Project No. N507 056 31/1289, IMMS PAS, supervisor, 2006-2009.

· W. Wajda - Modeling of microstructure and texture with respect to shear bands role, Project No. 3 T08A 061 30, IMMS PAS, supervisor, 2006-2009.

· H. Paul - Nucleation mechanisms during recrystallization process at triple point junction and at second phase particles, Project No. N507 055 31/1288, IMMS PAS, supervisor, 2006-2009.

Development projects

· H. Paul - Development of shaping technology of multilayer products for heat exchangers made from new functional materials based on aluminum alloys, Project No. R15 048 03, IMMS PAS supervisor, 2007-2010

International cooperation

· H. Paul - The mechanisms of microstructure and texture evolution during the early stages of softening by annealing of plane strain compressed fcc metals, Ecole des Mines de Saint Etienne, Centre SMS, France, 2008-2010.

· H. Paul - Microstructure and texture stability of ultra-fine grained aluminium alloys, Institut de Chiemie Moléculaire et des Matériaux d'Orsay (ICMMO), UMR CNRS 8182, Laboratoire de Physico-Chemie de l'Etat Solide, Universite Paris-Sud, Orsay, France, 2008-2009.

· A. Pawełek - Acoustic emission in compressed nanocrystalline Mg and Al alloys and composites, Institute of Materials and Machine Mechanics, Slovak Academy of Sciences Brati slava, Slovakia, 2008-2009.

PhD dissertation

· 2008 - Marcin Bijak, Orientation relationships in the recrystallization process of deformed Al-Mn alloy single crystals (supervisor: H. Paul).

PhD in progress

· Joanna Bogucka – Changes in plasticity of aluminium alloys subjected to grain refinement by severe plastic deformation (supervisor: H. Paul).

· Magdalena Miszczyk - Microstructure and texture evolution during softening by annealing of plane strain compressed fcc metals (co-tutelle Ph.D., supervisors: H. Paul and J.H. Driver).

Other activities and scientific achievements

· H. Paul - Region Rhone-Alp Fellowship (1999, 2003, 2006).

· H. Paul – position of 'Profeseurre Associe de 1^{ere} cl.' at Ecole des Mines de Saint Etienne, France, (2007).

· H. Paul – position of Professor Associate at Technical University of Opole, (2008 -).

· M. Miszczyk – MIRA Fellowship (Ecole des Mines de Saint Etienne), France.