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Employment and positions

Institute of Metallurgy and Materials Science, Polish Academy of Sciences: Ph.D. studies (1984-1987), assistant professor (1990-2003), From 2004 associate professor, From 2005- head of the Laboratory of Plastic Deformation of Metals of the Institute of Metallurgy and Materials Science of the Polish Academy of Sciences.

Scientific Career

M.Sc.: AGH-University of Science and Technology, 1983

Ph.D.: Institute of Metallurgy and Materials Science, Polish Academy of Sciences, 1989

D.Sc.: Institute of Metallurgy and Materials Science, Polish Academy of Sciences, 2003

Professor: President Republic of Poland, October 2010 (IMMS PAS in Krakow).

Scientific achievements

total number of scientific papers - 210, total number of citations - 415, h-index - 14

The most relevant publications during last 5 years

1.

M. Miszczyk, **H. Paul**, J.H. Driver and C. Maurice, *New orientation formation and growth during primary recrystallization in stable single crystals of three face-centred cubic metals*
, Acta Materialia 83 (2015) 120-136.

2.

H. Paul, A. Morawiec, T. Baudin, T. Czeppe, *TEM study of recrystallization in ultra-fine grain AA3104 alloy processed by high-pressure torsion* ,
Archives of Metallurgy and Materials, 60 (2015) pp. 131-144.

3.

H. Paul, J. Morgiel, M. Faryna, M. Prażmowski, *Microstructure and interfacial reactions during explosive bonding of carbon or stainless steels to zirconium*
, International Journal of Materials Research 106 (2015) DOI: 10.3139/146.111230, in print.

4.

S.M. Fatemi-Varzaneh, A. Zarei-Hanzaki, **H. Paul**, *Characterization of ultrafine and nano grained magnesium alloy processed by severe plastic deformation*
, Materials Characterization, 87 (2014) pp. 27-35.

5.

A. Morawiec, E. Bouzy, **H. Paul**, J.J. Fundenberger, *Orientation precision of TEM-based orientation mapping techniques, Ultramicroscopy*
, vol. 136 (2014) pp. 107-118.

6.

S. Wronski, J. Tarasiuk, B. Bacroix, K. Wierzbanowski, **H. Paul**, *Microstructure heterogeneity after the ECAP process and its influence on recrystallization in aluminium*
, Materials Characterization, vol. 78, 2013, pp. 60-68.

7.

H. Paul, L. Lityńska-Dobrzyńska, M. Prażmowski, *Microstructure and phase constitution near the interface of explosively welded aluminum/copper plates*
, Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, vol. 44 (2013) pp. 3836-3851.

8.

W. Wajda, L. Madej, **H. Paul**, R. Gołąb, M. Miszczyk, *Validation of Texture Evolution Model for Texture of Polycrystalline Aluminium on the Base of 3D Digital Microstructures*
, Steel Research International, Special Edition (2012) pp. 1111-1114.

9.

L. Madej, **H. Paul**, L. Trębacz, W. Wajda, M. Pietrzyk, *Multi billet extrusion technology for manufacturing bi-layered component* s,
CIRP Annals - Manufacturing Technology, 61 (2012) pp. 235-238.

10.

H. Paul, A. Morawiec, T. Baudin, *Early stages of recrystallization in ECAP-deformed AA3104 alloy investigated using SEM and TEM orientation mappings* ,
Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science, 43A (2012) pp. 4777-4793.

11.

L. Madej, K. Perzyński, W. Wajda, **H. Paul**, P. Cybulka, L. Rauch, *Numerical Analysis of the texture evolution on the basis of the CPFE and Digital Representaion*
, Steel Research International, Special edition (2011) pp. 854-859.

12.

H. Paul, *TEM orientation mapping in characterization of texture changes in fcc metals*, Advanced Engineering Materials, 12 (2010) pp. 1029-1036.

13.

H. Paul, A. Morawiec, M. Darrieulat, E. Bouzy, *Twinning and shear banding in a plane strain compressed at 77K Cu-8%at. Al alloy* , Journal of Microscopy, 237 (2010) pp. 314-319.

14.

H. Paul, *Pasma ścinania w metalach o sieci regularnej ściennie centrowanej,* pp. 1-158. Wydanie I, nakład 100 egz. Monografia, wyd. Centrum Poligrafii Cyfrowej, Kraków, 2009.

15.

M. Bijak, **H. Paul**, J.H. Driver, *Recrystallization of plane strain compressed Al-1%wt. Mn alloy single crystals of typical unstable orientations* , Journal of Microscopy, 237 (2010) pp. 221-226.

16.

H. Paul, Cl. Maurice, J.H. Driver, *The influence of changing strain path on microstructure and texture stability in initially Goss{110}<001>-oriented copper single crystals* , Acta Materialia, 58 (2010) pp. 2799-2813.

17.

H. Paul, A. Morawiec, J.H. Driver, E. Bouzy, *On Twinning and shear banding In A Cu-8 at.% Al alloy plane strain compressed at 77K* , International Journal of Plasticity, 25 (2009) pp. 1588-1608.

Research Projects

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Crystallographic and mechanical determinations of plastic flow instabilities formation in fcc metals after changing defromation path and during monotonic straining No: UMO-2014/13/B/ST8/04291 (2015-2017). Supervisor (OPUS program) - IMMS PAS in Krakow.

-

Phase transformations near the interface of bi- and three layered metallic strips based on copper manufactured by explosive welding technology, (2013-2016), No: 2012/05/B/ST8/02522 (2013-2016). Supervisor (OPUS program) - IMMS PAS in Krakow.

-

Phase transformations and microstructure changes in the interfacial zone of bi- and tri- metallic strips based on reactive metals fabricated by explosive welding (2012-2015) No: 2012/04/M/ST8/00401 (2012-2015). Supervisor ('Harmonia' program), IMMS PAS in Krakow.

-

Crystallographic aspects of recrystallization proces in technical aluminium alloys, No: IP2011 036471 (2012-2014). Co-worker (Iuventus Plus program) - IMMS PAS in Krakow.

-

Microstructure and Texture Evolution Mechanisms of fcc Metals in Recovery and Recrystallization Processes (2011-2014), No: N507 301040 (2011-2014). Supervisor, IMMS PAS in Krakow.

-

Badania mechanizmów odkształceń i przemian strukturalnych strefy złącza dwu- i trójwarstwowych układów z materiałów stalowych platerowanych metodą zgrzewania wybuchowego stopem cyrkonu Zr 700, No: N N507 457839 2010-2013. Co-worker (Technical University of Opole).

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Development and identification of polycrystalline micro- scale materials constitutive models (2011-2013), No: 2011/01/B/ST8/01649 (2011-2014). Co-worker, IMMS PAS in Krakow.

-

The investigations of the deformation mechanisms and structural transformations near the interface of bi- and three- metallic composites based on steel bonded with Zr700, manufactured by explosive welding technology (2010-2013), No: N508 583839 (2011-2013). Co-worker, AGH/Krakow.

-

The Influence of Second Phase Particles on Structure Refinement and Recrystallization Behaviour in Aluminium Alloys Fabricated by Severe Plastic deformation (2010-2012) , No: 765/N-FRANCJA/2010/0 (2010-2012). Supervisor (Harmonia program) - IMMS PAS in Krakow.

-

A Study of Manufacturing Technology of Multilayered Products Predestine on Heat Exchanger Elements Made from Modern Functional Materials Based on Aluminium Alloys (2006-2010), No: R15 048 03 (2007-2010). Supervisor (Research and Development Project) - IMMS PAS in Krakow.

-

Energetical Criterion of Lost of Plastic Deformation Stability of Policrystalline Materials (2007-2010) No: 0094/B/T02/2007/33 (2007-2010). Co-worker, IPPT/Warszawa.

-

Research program in the range of Polish-French cooperation (between IMMS PAS & EMSE) ‘Microstructure and texture evolution during softening by annealing of plane strain compressed fcc metals (2009 - 2011) supervisor.

-

‘Instability of plastic flow and nucleation of recrystallization in ultra-fine grained structures of metals', No:. 8229/2010, POLONIUM program (2010-2011), supervisor.

-

‘The influence of particles and strain path on texture evolution and stress concentration in ECAP processed aluminium alloys', in the range of polish-french cooperation between IMMS PAS in Krakow, Laboratoire de Leon Brillouin CEA Saclay Giff sur Yvette (France), and LPCES Université Paris-Sud w Orsay (France). Projects no: 9872 and 10098 (2010), supervisor.

-

‘Textures and stored energy analysis in multilayered metallic strip based on Zr and Ti fabricated by explosive welding' in the range of polish-french cooperation between IMMS PAS in Krakow, LPCES Université Paris-Sud w Orsay (Francja) and LLB CEA/Saclay, project no: 10944 (2012). Supervisors: H. Paul/T. Baudin/V. Klosek and M-H. Mathon. (Project financially supported by European Commission under the 7th Framework Programme through the key action: Strengthening the European Research Area, Research Infrastructures, Contract NMI3-II/FP7 No: 283883).

Experience gained abroad

Region Rhone-Alp fellowships: Ecole Nationale Supérieure des Mines de Saint-Etienne (Francja): 1999/2000 (9 months), 2003 (6 months), 2006 (3 months)

position of the ‘profeseurre associe de 1^{ere} cl.’, 2007 Ecole des Mines de Saint Etienne, France (3 months).

Some shorter visits: Centre SMS Ecole Nationale Supérieure des Mines de Saint-Etienne (Francja): 2004-2005 and 2008-2009 (3-6 weeks/year), Laboratoire de Physico-Chimie de l’Etat Solide, Universite de Paris-Sud, Orsay (France): 2001, 2008-2014 (2-3 weeks/year).

Prizes and awards

1983 2nd degree prize from the Rector of the University of Science and Technology.

1999, 2003, 2006 Fellowship of Region Rhone-Alp (France)

2004 First Prize from the President of the IV Division (Technical Sciences) of the Polish Academy of Sciences

2006 2nd degree prize from the Rector of the University of Zielona Góra

2007 position of the '*profeseurre associe de 1ere cl*.' Ecole des Mines de Saint Etienne, France

2009 and 2010 1sth degree prize from the Rector of the Technical University of Opole

Education of scientific staff

Ph.D. thesis - finished

2013 - Dr Magdalena, Maria Miszczyk, Microstructure and texture evolution during annealing of plane strain compressed fcc metals.

2010 - Dr Joanna Bogucka, Zmiany plastyczności stopów aluminium poddanych rozdrobnieniu ziarna metodą intensywnych odkształceń plastycznych.

2008 - Dr Marcin Bijak, Zależność orientacji w procesie rekrystalizacji odkształconych monokryształów stopu Al-Mn.

Ph.D. thesis - in progress:

MSc. Jagoda Poplewska, Role of low-angle boundaries in microstructure and texture transformations during annealing of severely deformed aluminum alloys (Rola granic małego kąta w przemianach mikrostruktury i tekstury podczas wyżarzania silnie odkształconych stopów aluminium), defence on 2015-04-23.

MSc. Wojciech Skuza, Charakterystyka przemian zachodzących w strefie połączenia platerów na bazie miedzi wytworzonych metodą spajania wybuchowego.
19 M.Sc. thesis

External reviewer of 4 Ph.D. thesis

Reviewer in: Acta Materialia, Materials Characterization, Materials Science and Engineering, Philosophical Magazine, Microchimica Acta, Materials Science Forum, Archives of Metallurgy

and Materials, International Journal of Material Forming, etc.

Membership in professional societies

Electron Microscopy and Analysis Society,

Polish Association for Materials Science,

Member of Scientific board of Archives of Metallurgy and Materials,

Member of the Scientific Board of the Institute of Metallurgy and Materials Science of the Polish Academy of Sciences (2015-2018).

Main scientific interest

Crystallographic aspects of deformation and recrystallization, severe plastic deformation, non-homogeneous flow of metals, techniques of local orientation measurements in TEM and SEM, deformation bonding (including explosive bonding).