

Jerzy BYSTRZYCKI, PhD, DSc

Associate Professor
(prof. nzw. dr hab. inż.)

Military University of Technology,
Faculty of Advanced Technology and Chemistry
Department of Advanced Materials and Technologies
Kaliskiego 2, 00-908 Warsaw, Poland
Tel: (48-22) 683-7135; Fax: (48-22) 683-944
E-mail: jbystrzycki@wat.edu.pl



DATE AND PLACE OF BIRTH: December 24, 1963, Lubaczów, Poland

NATIONALITY: Polish

Professional Background

Rank/Position	Dates	Employer
Professor of MUT	2006-present	Department of Advanced Materials and Technology, Military University of Technology (MUT)
Deputy Director of the Institute	2003-2005	Institute Mater. Science and Applied Mechanics, MUT
Head of Department	2000-2002	Department of Materials Technology, MUT
PhD Adiunkt	1995-2005	Institute Mater. Science and Applied Mechanics, MUT
NATO Sci. PhD Fellow	1996-1998	Department of Mechanical Engineering, University of Waterloo (Canada)
Research Assistant	1992	Faculty of Materials Science and Engineering, Warsaw University of Technology
Research Assistant	1990-94	Department of Metallurgy and Metals Technology, MUT

Course of Scientific Work

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|--------------------|-----------------------------------|--------------------|--------------|
| • M.Sc. | Military University of Technology | Applied Physics | 1989 |
| • Research Assist. | Warsaw Univ. of Technology | Mater. Sci. & Eng. | 1992 |
| • Ph.D. | Military University of Technology | Mater. Sci. & Eng. | 1994 |
| • Post.Doc | University of Waterloo | Mech. Eng. | 1996-98 |
| • D.Sc . | Military University of Technology | Mater. Sci. & Eng. | 2005 |
| • Prof. of MUT | Military University of Technology | Mater. Sci. & Eng. | 2006-present |

SPECIALIZATION

- (i) main field: Materials Science and Engineering
(ii) current research interests: hydrogen storage materials; nanomaterials, intermetallics and other advanced materials, cold and hot working, additive manufacturing, mechano-chemical synthesis of metastable solid state materials

RESEARCH EXPERTISE

Synthesis of solid state hydrogen storage materials and intermetallics; relationships between microstructure and mechanical properties of metallic materials; grain boundary effects in polycrystals; X-ray diffraction analysis, scanning and transmission electron microscopy, energy dispersive X-ray spectroscopy, electron backscatter diffraction, image analysis, thermal analysis, additive manufacturing, laser engineering net shaping, mechano-chemical synthesis

International scientific visits:

- 2010 Department of Mechanical Engineering, University of Waterloo, Visiting Professor
- 1996-1998: Department of Mechanical Engineering, University of Waterloo, NATO-Science PhD. Fellowship,
- 1 week, 1995: Carl Zeiss, Germany
- 1 week, 1995: Philips Electron Optics, the Netherlands
- 2 months, 1994, University of Waterloo, Canada

Awards:

- Nagroda IV Wydziału NT PAN za rozprawę habilitacyjną, 2006
- NATO-Science PhD Fellowship, University of Waterloo, Canada, 1996-1998
- Stypendium Fundacji na Rzecz Nauki Polskiej, 1993
- Nagrody naukowe Rektora WAT: 1989, 1994, 1995, 2004, 2005, 2006

Participation in R&D Projects from 2005

1. Research Project (no. N507 192 32/3066, MNiSW) Title: Processing Maps for Hot Working of Iron Aluminides, Director
2. Research Project (no. PBZ 117/T08/2005, MNiSW) Title: Technology of Hydrogen Storage Mg-based Nanomaterials for Hydrogen Economy, Director.
3. R&D Project (no. R07 025 02/2007, MNiSW) Title: Technology of Fe and Ni Aluminides for Selected Applications in Energy Industry, Research Staff.
4. R&D Project (no. IT1 13798/2008, NCBiR) Title: Manufacturing of bulk metallic nanomaterials, Research Staff.
5. Research Project (no. N N507 352735, MNiSW) Title: Studies of composite hydrides for hydrogen storage, Research Staff.
6. Research Project (no: POIG-FS 32-475/2008/WAT, NCBiR) Task no. IV, Title: R&D of Materials for Hydrogen Storage, Director.
7. Infrastructure Project (no: POIG2.1, NCBiR), Title: Laboratory of Design and Rapid Manufacturing of Components, Deputy Director.
8. R&D Project (no. R15 0010 06, NCBiR), Title: Development of Advanced Intermetallic Alloys, Director.
9. Research Project POLONIUM 2009-2010 Title: Fabrication and Characterization of Ultrafine-grained Fe-Al Intermetallic Alloys, MUT-EMSE de St-Etienne, Polish coordinator.

NCBiR – The National Centre for Research and Development

MNiSW – Ministry of Science and Higher Education

MEMBERSHIP OF PROFESSIONAL SOCIETIES:

Polish Materials Research Society (PMRS)
Polish Hydrogen & Fuel Cell Platform

UNDERGRADUATE AND GRADUATE STUDENTS SUPERVISED:

Bachelor Degrees Completed:	1
Masters Degrees Completed:	12
PhD Degrees Completed	1
PhD Degrees in Progress:	4

UNDERGRADUATE, GRADUATE AND POSTGRADUATE COURSES TAUGHT

Course title	Year taught
Materials Science and Engineering	I Bachelor courses
Manufacturing Methods	II Bachelor courses I Master courses
Advanced Materials and Technologies	I Master courses
Intermetallics	II Master courses PhD courses
Nanomaterials - structure, properties, processing and applications	PhD courses

REVIEWING ACTIVITIES

Journals: Journal of Materials Science, Solid State Phenomena, Journal of Alloys and Compounds, International Journal of Hydrogen Energy, Materials Science and Technology, Intermetallics, Zeitschrift fuer Kristallographie

Agencies: Polish Committee for Scientific Research, United Kingdom Natural Environment Council, US National Science Foundation, Czech Science Foundation

COOPERATION in the area of Hydrogen Storage:

- Prof. Rober A. Varin, *Department of mechanical Engineering, University of Waterloo, Canada*
- Prof. T. R. Jensen, Dr T. K. Nielsen, *Department of Chemistry and iNANO, University of Aarhus, DK-8000, Denmark*

RESEARCH PUBLICATIONS - LIFE TIME SUMMARY:

Books: 1

Chapters in books: 2

Refereed Journal Papers: 72

Papers in Conference Proceedings: 88

Invited talks: 4

Patents: 2

Citations: 244 according to Scopus (14.06.2011), h-index 8

Information on Research Work**A. Refereed Journal Papers in the last 2 years:**

1. R. A. Varin, L. Zbroniec, M. Polanski, J. Bystrzycki, A Review of Recent Advances on the Effects of Microstructural Refinement and Nano-Catalytic Additives on the Hydrogen Storage Properties of Metal and Complex Hydrides, *ENERGIES*, 4 (2011) 1-25.
2. M. Polanski, J. Bystrzycki, R. A. Varin, T. Płociński, M. Pisarek, The effect of chromium (III) oxide (Cr₂O₃) nanopowder on the microstructure and cyclic hydrogen storage behavior of magnesium hydride (MgH₂), *JOURNAL OF ALLOYS COMPOUNDS*, 509 (2011) 2386-2391.
3. T. Durejko, S. Lipiński, Z. Bojar, J. Bystrzycki, Processing and characterization of graded metal/intermetallic materials: The example of Fe/FeAl intermetallics, *MATERIALS & DESIGN*, 32 (2011) 2827-2834.
4. R. Łyszkowski, J. Bystrzycki, T. Płociński; *Processing maps for hot working of FeAl-based alloy*, *INTERMETALLICS* (2010) 18, 1344-1347.
5. J. Bystrzycki, A. Fraczkiewicz, R. Łyszkowski, M. Mondon, Z. Pakieła, *Microstructure and tensile behavior of Fe-16Al-based alloy after severe plastic deformation*, *INTERMETALLICS* (2010) 18, 1338-1343.
6. I. Malka, T. Czujko, J. Bystrzycki, *Catalytic effect of halide additives ball milled with magnesium hydride*, *INTERNATIONAL JOURNAL OF HYDROGEN ENERGY*, (2010) 35, 1706-1712.
7. M. Polanski, T. K. Nielsen, Y. Cerenius, J. Bystrzycki, T. R. Jensen, *Synthesis and decomposition mechanisms Mg₂FeH₆ studied by in-situ synchrotron X-ray diffraction and high-pressure DSC*, *INTERNATIONAL JOURNAL OF HYDROGEN ENERGY*, (2010) 35, 35-78-35-82.

8. M. Polanski, T. Plocinski, I. Kuncce, J. Bystrzycki, *Dynamic synthesis of ternary Mg₂FeH₆*, INTERNATIONAL JOURNAL OF HYDROGEN ENERGY (2010) 35, 1257-1266.
9. J. Bystrzycki, M. Polański, I. E. Malka, A. Komuda, *Hydriding properties of Mg-Al-Zn quasicrystal powder produced by mechanical alloying*, Z. KRISTALLOGR. 224 (2009) 105-108.
10. J. Bystrzycki, M. Polański, T. Płociński, *Nano-Engineering Approach to Destabilization of Magnesium Hydride (MgH₂) by Solid-State Reaction with Si*, JOURNAL OF NANOSCIENCE AND NANOTECHNOLOGY, 9 (2009) 3441-3448.
11. J. Bystrzycki, T. Płociński, W. Zieliński, Z. Wiśniewski, M. Polański, W. Mróz, Z. Bojar, K.J.Kurzydłowski, *Nano-engineering of magnesium hydride for hydrogen storage*, MICROELECTRONIC ENGINEERING, 86 (2009) 889-891
12. M. Polański, J. Bystrzycki, *Comparative studies of the influence of different nano-sized metal oxides on the hydrogen sorption properties of magnesium hydride*, JOURNAL OF ALLOYS COMPOUNDS, 486 (2009) 697-701.
13. M. Polański, J. Bystrzycki, *The influence of different additives on the solid-state reaction of magnesium hydride (MgH₂) with Si*, INTERNATIONAL JOURNAL OF HYDROGEN ENERGY, 34 (2009) 7692 – 7699.
14. Z. Wiśniewski, J. Bystrzycki, W. Mróz, C. Jastrzębski, *Hydrating behavior of Mg-based nano-layers prepared by pulsed laser deposition*, JOURNAL OF PHYSICS: Conference Series 146 (2009) 012018.
15. R. Łyszkowski J. Bystrzycki I. Kuncce, A. Fraczkiewicz, *Silne odkształcenie plastyczne stopów Fe-Al w procesie kucia naprzemiennego*, RUDY I METALE NIEŻELAZNE, 11 (2009) 791-797.

B. Selected 10 Presentations at the International Conferences:

1. J. Bystrzycki, *Microstructural aspects of hydrogen storage materials: by the example of magnesium-based hydrides*, **E-MRS 2010 Fall Meeting, Symposium: Novel Materials for Alternative Energy Sources**, September 13-17, 2010, Warsaw, Poland (**invited lecture**).
2. I. E. Malka, T. Czujko, T. Płociński, J. Bystrzycki, *Microstructure and hydrogen storage properties of magnesium hydride with zirconium and niobium fluoride additives after cycling loading*. **International Symposium on Metal-Hydrogen Systems: MH 2010** July 19-23, Moscow, Russia, 2010.
3. A. Fraczkiewicz, J. Bystrzycki, S. Najjar, I.Kuncce, R. Łyszkowski, F. Montheillet, *Attempts at obtaining fine-grained ordered Fe-Al alloys*, **MRS 2010 Fall Meeting: Symposium N: Intermetallic-Based Alloys for Structural and Functional Applications**, Boston USA November 29 - December 2, 2010.
4. J. Bystrzycki, *Severe plastic deformation of iron aluminides*, **5th Discussion Meeting on the Development of Innovative Iron Aluminium Alloys**, Prague 21-24.09.2009 (**invited lecture**).
5. M. Polanski, T. Plocinski, J. Bystrzycki, *Microstructure and hydrogen storage properties of magnesium hydride with nanosized catalysts*, 3rd Inter. **Conference on Surfaces, coatings and nanostructured materials, "NanoSMat2008"**, 21-24 October 2008, Barcelona, Spain.
6. J. Bystrzycki, M. Polanski, I. E. Malka, A Komuda, *Hydriding properties of Mg-Al-Zn quasicrystal powder produced by mechanical alloying*, **10th International Conference on Quasicrystals**, July 06-11, 2008, Zurich, Switzerland
7. J. Bystrzycki, M. Polanski, T. Plocinski, I. E. Malka, Z. Wiśniewski, *Nano-engineering of magnesium hydride for hydrogen storage*, **34th Inter. Congress on Micro and Nano Engineering**, 14-20.09.2008r, Athens, Greece,
8. I. Malka, J. Bystrzycki, *Influence of cycling on microstructure and hydriding/dehydriding properties of nanocrystalline magnesium hydride with nanosized niobium fluoride*, **Symposium "Novel synthesis processes and design of nanomaterials for catalytic applications"**, 2008 E-MRS Fall Meeting, Warsaw.
9. M. Polanski, J. Bystrzycki, *Improvement of hydrogen sorption kinetics in nanocrystalline MgH₂ catalyzed with metal oxides nanoparticles*, **World Hydrogen Technologies Convention (WHTC)**, Montecatini Terme, Italy, 4-7 November, 2007, p.27.

10. J. Bystrzycki, M. Polanski, W. Mroz, T. Plocinski, *Nano-engineering approach to destabilization of MgH_2 by chemical reaction with Si*, **2nd International Conference on Surfaces, Coatings and Nanostructured Materials (NanoSMat)**, 9-11 July 2007, p.233.