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Employment and positions

Institute of Metallurgy and Materials Science, Polish Academy of Sciences: assistant (since 1983), assistant professor (since 1994), associate professor (since 2008), professor PAS (since 2010).

Scientific Carrier

M.Sc.: Jagiellonian University, Faculty of Mathematics, Physics & Chemistry, 1982

Ph.D.: Institute of Metallurgy and Materials Science, Polish Academy of Sciences, 1994

D.Sc.: Institute of Metallurgy and Materials Science, Polish Academy of Sciences, 2007

Scientific achievements

84 papers (30 of them cited by the Institute for Scientific Information in Philadelphia), 1 book, 30 presentations during conferences.

The most relevant publications (last years)

1.

Ł. Rogal, B. Baran, P. Bobrowski, A. Tarasek, **P. Ozga**, L. Litynska-Dobrzyńska, „Effect of Nano-SiC on Microstructure and Mechanical Properties of AZ91 Magnesium Alloy Processed by Thixomolding”, Solid State Phenomena, 285 (2019) 133-138.

2.

P.A. Trzaskowska, A.Poniatowska, M. Trzaskowski, J. Latocha, **P.Ozga**, R. Major, T.Ciach, „Lecithin suspensions for electrophoretic deposition on stainless steel coatings”, Materials Science & Engineering C, 2018, 93, str. 134-144.

3.

Z.Starowicz, R.Wojnarowska-Nowak, **P.Ozga**, E.M.Sheregii, „The tuning of the plasmon resonance of the metal nanoparticles in terms of the SERS effect”, Colloid and Polymer Science, 296 (2018) 1029-1037.

4.

J.Dutkiewicz, Ł.Rogal, P.Fima, **P.Ozga**, „Composites Strengthened with Graphene Platelets and Formed in Semisolid State Based on α and α/β MgLiAl Alloys”, Journal of Materials Engineering and Performance, 27 (2018) 2205-2215.

5.

Piotr Ozga, „Elektrolityczne otrzymywanie warstw lutowniczych na bazie stopów Sn-Zn. Kąpiele elektrolityczne do otrzymywania warstw lutowniczych Sn-Zn-Bi”, Monografia: 65 lat Inst. Met. i Inż. Mat. im. A.Krupkowskiego PAN, IMIM PAN, ISBN 978-83-60768-41-9 (2017) 155-170.

6.

Janusz Pstruś, **Piotr Ozga**, Tomasz Gancarz, Katarzyna Berent, „Effect of Graphene Layers on Phenomena Occurring at Interface of Sn-Zn-Cu Solder and Cu Substrate”, *Journal of electronic materials*, 46 (8) (2017) 5248-5258.

7.

J.Dutkiewicz, **P. Ozga**, J. Pstruś, W. Maziarz, J. Grzegorek, „Silver matrix composites consolidated and hot extruded from ball milled powders strengthened with different types of graphene platelets”, *Composites Theory and Practice*, 4, (2016) 207-211.

8.

Z. Świątek, M. V. Yakushev, I. I. Izhnin, **P. Ozga**, K. D. Mynbaev, V. S. Varavin, D. V. Marin, N. N. Mikhailov, S. A. Dvoretzky, A. V. Voitsekhovskii, H. V. Savitsky, and O. Yu. Bonchuk, „Electrical and optical studies of a tellurium-related defect in molecular-beam epitaxy-grown HgCdTe”, *Physica Status Solidi C*, 13 (2016) 461-464.

9.

H. Kazimierzczak, A. Hara, A. Bigos, **P.Ozga**, „Electrodeposition of Zn-Mn-Mo layers from citrate-based aqueous electrolytes”, *Electrochimica Acta*, 202 (2016) 110-121.

10.

K.Janik, T. Czeppe, L. Jaworska, P. Figiel, L. Lityńska-Dobrzyńska, **P. Ozga**, „Structure and properties of the graphene and diamond-copper composites fabricated by the high pressure-high temperature method”, *Mechanik*, 5-6 (2016) 502-50.

11.

Z.Świątek, **P. Ozga**, I. I. Izhnin, E.I.Fitsych, A.V. Voitsekhovskii, A.G.Korotaev, K. D. Mynbaev, V. S. Varavin, S. A. Dvoretzky, N. N. Mikhailov, M. V. Yakushev, O. Yu. Bonchuk H. V. Savitsky, „Electrical and Optical Studies of Defect Structure of HgCdTe Films Grown by

Molecular Beam Epitaxy", Russian Physics Journal, 59 (2016) 442-445.

12.

J. Stolarska, J. Dutkiewicz, W. Maziarz, J. Pstruś, A. Wójcik, **P. Ozga**, "Copper matrix composites strengthened with carbon nanotubes or graphene platelets prepared by ball milling and vacuum hot pressing", Composites Theory and Practice, 3 (2015) 174-180.

13.

J. Dutkiewicz, **P. Ozga**, W. Maziarz, J. Pstruś, B. Kania, P. Bobrowski, J. Stolarska, "Microstructure and properties of bulk copper matrix composites strengthened with various kinds of graphene nanoplatelets", Materials Science & Engineering A628 (2015) 124-134

14.

H. Kazimierzak, P. Ozga, K. Berent, M. Kot, "Microstructure and micromechanical properties of electrodeposited Zn-Mo coatings on steel", Journal of Alloys and Compounds, 636 (2015) 156-164

15.

Tomasz Czeppe, Elena Korznikova, **Piotr Ozga**, Lidia Litynska-Dobrzynska, Robert Socha, "Application of the high pressure torsion supported by mechanical alloying for metal-graphene composites preparation", Mechanik (2015), 2, 147-157

16.

Z. Starowicz, M. Lipiński, R. P. Socha, K. Berent, G. Kulesza & **P. Ozga**, "Photochemical silver nanoparticles deposition on sol-gel TiO₂ for plasmonic properties utilization" J Sol-Gel Sci Technol, 73 (2015) 563-571

17.

P. Ozga, H. Kazimierzak, Z. Świątek, M. Słupska, A. Dębski, E. Bielańska, R. Socha, B. Onderka, M. Michalec, „Opracowanie podstaw elektrolitycznego otrzymywania stopów na bazie Zn-Sn oraz Mn-Sn z domieszką molibdenu lub wolframu zastępujących kadm oraz eliminujących Cr(VI)", rozdział w monografii „Zaawansowane materiały i technologie ich wytwarzania", ISBN 978-83-938792-1-2, IMN Gliwice, (2014), 497-510

18.

H. Kazimierczak, **P. Ozga**, A. Jałowiec, R. Kowalik "Tin-zinc alloy electrodeposition from aqueous citrate baths" Surface & Coatings Technology 240 (2014) 311-319

19.

M. Słupska, **P. Ozga**, "Electrodeposition of Sn-Zn-Cu alloys from citrate solutions", Electrochimica Acta, 141 (2014) 149-160

20.

P. Czaja, W. Maziarz, J. Przewoźnik, A. Żywczak, P. Ozga, M. Bramowicz, S. Kulesza, J. Dutkiewicz, "Surface topography, microstructure and magnetic domains in Al for Sn substituted metamagnetic Ni-Mn-Sn Heusler alloy ribbons", Intermetallics, 55 (2014) 1-8

21.

T. Czeppe, E. Korznikova, **P. Ozga**, M. Wrobel, L. Litynska-Dobrzynska, G.F. Korznikova, A.W. Korznikov, P. Czaja, and R. Socha, "Composition and Microstructure of the Al-Multilayer Graphene Composites Achieved by the Intensive Deformation," Acta Physica Polonica A, vol. 126, no. 4, (2014) 921-927

22.

Honorata Kazimierczak, **Piotr Ozga**, Monika Słupska, Zbigniew Swiatek, Katarzyna Berent "Electrodeposition of Sn-Mn Layers from Aqueous Citrate Electrolytes", Journal of The Electrochemical Society 04/2014; 161(6):D309-D320

23.

Z.Świątek, H.Kazimierczak, **P.Ozga**, A.Bonchuk, H.Savytskyy, M.Michalec, "X-ray structural and microstructural analysis of electrolytic Zn-Mo layers. Studies and ab initio calculations". Physico-Chemical Mechanics of Materials, 10 (2014), 305-309

24.

M.Słupska, **P.Ozga**, Z.Świątek, H.Kazimierczak, "The development of stable baths for electrodeposition of Sn-Zn-Cu free solder alloys", Inżynieria Materiałowa, (2013), XXXIV, 193-197

25.

H. Kazimierczak, **P. Ozga**, A. Jałowiec, R. Kowalik, "Electrochemical deposition of tin-zinc alloys from citrate solutions", *Inżynieria Materiałowa*, (2013), XXXIV, 290-294

26.

H. Kazimierczak, **P. Ozga**, Z. Świątek, E. Bielanska "Characterization of Zn-Mo surface layers electrodeposited from citrate solutions" *Journal of Alloys and Compounds* 578 (2013) 82-89

27.

H. Kazimierczak, **P. Ozga**, "Electrodeposition of Sn-Zn and Sn-Zn-Mo layers from citrate solutions" *Surface Science* 607 (2013) 33-38

28.

H. Kazimierczak, **P. Ozga**, R.P. Socha "Investigation of electrochemical co-deposition of zinc and molybdenum from citrate solutions", *Electrochimica Acta* 104 (2013) 378-390

29.

P. Ozga, „Projektowanie kąpieli do elektrolitycznego osadzania stopów z wykorzystaniem modeli termodynamicznych. Kąpiele do elektrolitycznego otrzymywania stopów lutowniczych In-Sn", *Monografia: 60 lat Inst. Met. i Inż. Mat. im. A. Krupkowskiego PAN, IMIM PAN*, (2012) 127-148

30.

Z. Świątek, M. Michalec, **P. Ozga**, H. Kazimierczak, O. Bonchuk, G. Savitskij, *Physicochemical Mechanics of Materials*, 9 (2012) 529-534.

31.

Piotr Ozga, „Modele termodynamiczne kąpieli kompleksowych do osadzania stopów cynku oraz cyny", *WN „Akapił”, Kraków, "Polska Metalurgia w latach 2006-2010"*, ISBN 978-83-60958-64-3 2010, str. 138-147.

32.

Zbigniew Świątek, Marek Michalec, **Piotr Ozga**, Olexander Bonchuk, Grigorij Savitskij, Andrzej Budziak, „X-ray structural diagnostic of corrosion processes in electrodeposited zinc-based alloys”, Physicochemical Mechanics of Materials, 8 (2010) 338-342.

33.

Piotr Ozga, Zbigniew Świątek, Adam Dębski, Jan Bonarski, Leszek Tarkowski, Elżbieta Bielańska, Piotr Handzlik, Bogusław Onderka, Marek Michalec „Warstwy i powłoki ochronne zastępujące kadm na bazie stopów cynku z żelazowcami oraz manganem otrzymywane elektrolitycznie z kąpeli kompleksowych”, wyd. IMN Gliwice, „Nowoczesne technologie oraz zaawansowane materiały i wyroby w zrównoważonym rozwoju przemysłu metali nieżelaznych”, ISBN 978-83-925546-6-0, 2010, str. 295-306.

34.

P.Ozga „Rola kompleksowania w procesach elektrolitycznego otrzymywania metali i stopów z roztworów cytrynianowych.” IMIM PAN, Kraków 2006, ISBN 83-921845-8-0, str. 1-149.

35.

P.Ozga, Z.Świątek, M.Michalec, B.Onderka, J.Bonarski „Phase Structure and Texture of Electrodeposited InSn Alloys on Copper Substrate”, Archives of Metallurgy and Materials, 1 (2008) 307.

36.

P.Ozga „Electrodeposition of Sn-Ag and Sn-Ag-Cu alloys from the thiourea solutions”, Archives of Metallurgy and Materials, 3 (2006) 413.

37.

P.Ozga, E.Bielańska „Determination of the corrosion rate of Zn and Zn-Ni layers”, Materials Chemistry & Physics, 81 (2003) 562.

38.

E.Beltowska-Lehman, **P.Ozga** „Electrodeposition of ZnTe thin films”, Archives of Metallurgy and Materials, 50 (2005) 319

39.

E.Beltowska-Lehman, **P.Ozga**, Z.Świątek, M.Michalec, H.Pokhmurska „Influence of bath additives on phase composition of corrosion-resistant Zn-Ni coatings", Physicochemical Mechanics of Materials, Problems of Corrosion and Corrosion Protection of Materials, Tom 2, No. 4, (2004) 626.

40.

E. Beltowska-Lehman, **P. Ozga**, Z. Swiatek, C. Lupi „Electrodeposition of Zn-Ni Protective Coatings from Sulphate-Acetate Baths", Surface and Coatings Technology, 151-152 (2002) 444.

41.

E. Beltowska-Lehman, **P. Ozga**, Z. Swiatek, C. Lupi „Influence of structural factor on corrosion rate of functional Zn-Ni coatings", Crystal Engineering, 5 (2002) 335.

Research Projects

Projects from Ministry of Science and Higher Education and POIG

-

Determination of technological rules for electrochemical deposition of Pb-free In-Sn solder alloys (Project No 3T08A04527), IMMS PAS, supervisor, 2004-2007;

-

Advance materials and their production technologies. ZAMAT. Project jointly financed by European Union and Poland, POIG.01.01.02-00-015/09-00, IMMS PAS, task leader, 2010-2013.

-

Adaptation of the research potential of IMMS PAS to the requirements of global standards for comprehensive research in the field of materials science, (Project jointly financed by European Union and Poland, POIG.02.01.00-12-175/09), IMMS PAS, leader of 2 tasks, 2011-2015.

Projects from The National Centre for Research and Development

-

Improvement of competition and innovation of national non-ferrous metal processing industry by study of advanced metallic materials and technology of its fabrication (Project: No PBZ-3/3):
Task II-3.4: *The Layers*
and the Protective Coatings on the Basis of Zinc Alloys with Ferrous Metals and Manganese for Replacing Cadmium Coatings Obtained by Electrodepositing from Complex Solutions

IMMS PAS,
task leader, 2007-2010.

European Union Projects

-

Lead-free solder materials (COST, Action 531), Task: *The Electrodeposition of Sn-Ag Soldering Alloys from Aqueous Solutions*, IMMS PAS, task leader, 2002-2006.

-

Advanced Solder Materials for High Temperature Applications HISOLD (COST, Action MP 0602), Task: *The Development of Stable, Non-cyanide Baths for Electrodeposition of Bi-Ag and Au-Sn Alloys from Aqueous Solutions*, IMMS PAS, task leader, 2007-2010.

-

COST MP1407, Electrochemical processing methodologies and corrosion protection for device and systems miniaturization (e-MINDS) (Member of Management Committee), main scientific activity: Electrodeposition of solder nanowires for micro- and nanojoining processes, 2015-2019.

Common research within the scientific network

-

Advanced Soldering Materials (Scientific Network), contractor, IMMS PAS, 2007-2008.

Experience gained abroad:

Institute of Physical Chemistry - Sofia.

Institute of Solid State and Semiconductors - Minsk.

Prizes and awards:

1994- Ph.D. with honour

2012 Silver Cross of Merit for all the scientific activity

Education of scientific staff

Supervisor of PhD thesis (mgr.inż. H.Kazimierczak), (mgr.inż.M.Słupska, A.Hara - in the course of PhD research)

External Reviewer of Habilitation and PhD theses: 7.

Reviewer:

Archives of Metallurgy and Materials, Journal of Applied Electrochemistry, Corrosion Science, The European Physical Journal Applied Physics (EPJ AP), Materials Science and Engineering B, Materials Science-Poland, Applied Surface Science, Journal of Electroanalytical Chemistry Ministry of Science and Higher Education, Foundation for Polish Science, NCN, NCBiR.

Organisation of conferences and scientific events

Member of Organizing Committee, CALPHAD XXXIII „An International Conference on Phase Diagram Calculation and Computational Thermochemistry” (2004).

Membership in professional societies

Member of scientific committee: International Society of Electrochemistry (ISE), Section: Theory of Metallurgical Processes, Commission of Metallurgy PAS, Scientific Board of the IMMS PAS.

Main scientific interest

Kinetics of electrodeposition of metals and alloys

Thermodynamic analysis of the electrolytic baths for electrodeposition of metals and alloy

Physicochemical properties the electrodeposited materials, microstructure and texture of electrodeposited layers;

Modelling of alloy plating;

Characterization electrodeposits by AFM and μ -RS;

Graphene : barrier properties and characterization by μ -RS;

Electrodeposition of alloys with special consideration given to:

- Pb-free soldering materials (Sn-Ag, Sn-Ag-Cu, In-Sn, Sn-Bi, Sn-Au, Sn-Zn);
- Corrosion resistant alloys (Zn-Ni, Zn-Cu, Ni-Cu, Ni-Cu-Mo, Zn-Fe, Zn-Co, Zn-Sn, Zn-Mn);
- Semiconductor films.