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Employment and positions

Institute of Metallurgy and Materials Science, Polish Academy of Sciences, since 2005.

Scientific Career

M.Sc.: AGH- University of Science and Technology, 2004.

Ph.D.: Institute of Metallurgy and Materials Science, Polish Academy of Sciences, 2013

D.Sc. - Institute of Metallurgy and Materials Science, Polish Academy of Sciences, 2017

Scientific achievements

104 papers, 56 of them (abstracted) cited by the Journal Citation Reports

The most relevant publications during last 5 years

1.

T. Gancarz, J. Pstruś, P. Fima, S. Mosińska, Effect of Ag addition to Zn-12Al alloy on kinetics of growth of intermediate phases on Cu substrate, *J. Alloy Compd.* 582 (2014) 313-322, <http://dx.doi.org/10.1016/j.jallcom.2013.08.055> (IF2014: 2.999)

2.

T. Gancarz, P. Fima, J. Pstruś, Thermal Expansion, Electrical Resistivity, and Spreading Area of Sn-Zn-In Alloys, *J. Mater. Eng. Perform.* 23 (2014) 1524-1529, <http://dx.doi.org/10.1007/s11665-013-0825-3> (IF2014: 0,998)

3.

P. Fima, J. Pstruś, **T. Gancarz**, Wetting and Interfacial Chemistry of SnZnCu Alloys with Cu and Al Substrates, *J. Mater. Eng. Perform.* 23 (2014) 1530-1535, <http://dx.doi.org/10.1007/s11665-014-0867-1> (IF2014: 0,998)

4.

J. Pstrus, **T. Gancarz**, Interfacial Phenomena in Al/Al, Al/Cu, and Cu/Cu Joints Soldered Using an Al-Zn Alloy with Ag or Cu Additions, *J. Mater. Eng. Perform.* 23 (2014) 1614-1624, <http://dx.doi.org/10.1007/s11665-014-0942-7> (IF2014: 0,998)

5.

K. Berent, P. Fima, **T. Gancarz**, J. Pstrus, Wetting and microstructure evolution of the Sn-Zn-Ag/Cu interface, *J. Mater. Eng. Perform.* 23 (2014) 1630-1634, <http://dx.doi.org/10.1007/s11665-014-0929-4> (IF2014: 0,998)

6.

T. Gancarz, W. Gasior, H. Henein, The Discharge Crucible Method for Making Measurements of the Physical Properties of Melts: An Overview, *Int. J. Thermophys.* 35 (2014) 1725-1748, <http://dx.doi.org/10.1007/s10765-014-1748-4> (IF:0.963)

7.

M. Trybula, **T. Gancarz**, W. Gasior, A. Pasturel, Bulk and Surface Properties of Liquid Al-Li and Li-Zn Alloys, *Metall. Mater. Trans. A* 45 (2014) 5517-5530
<http://dx.doi.org/10.1007/s11661-014-2524-6> (IF2014: 1,730)

8.

T. Gancarz, Physicochemical Properties of Sb-Sn-Zn Alloys, *J. of Electron. Mater.* 43 (2014) 4374-4385, <http://dx.doi.org/10.1007/s11664-014-3320-1> (IF2014: 1,798)

9.

T. Gancarz, J. Pstrus, Formation and growth of intermetallic phases at the interface in the Cu/ Sn-Zn-Ag-Cu /Cu joints, *J. Alloy Compd.* 647 (2015) 844-856,
<http://dx.doi.org/10.1016/j.jallcom.2015.06.122> (IF2015: 3,014)

10.

T. Gancarz, J. Pstrus, Characteristics of Sn-Zn cast alloys with the addition of Ag and Cu, *Arch. Metall. Mater.* 60 (2015) 1603-1607, <http://dx.doi.org/10.1515/amm-2015-0280> (IF2014: 1,090)

11.

T. Gancarz, W. Gasior, The effects of Na addition on the density, surface tension and viscosity of liquid Sn-Zn alloys, *Fluid Phase Equilibr.* 418 (2016) 57-61,
<http://dx.doi.org/10.1016/j.fluid.2015.09.009> (IF2016: 2,473)

12.

T. Gancarz, J. Pstrus, S. Mosińska, S. Pawlak, Effect of Cu addition to Zn-12Al alloy on thermal properties and wettability on Cu and Al substrates, *Metall. Mater. Trans. A* 47 (2016) 368-377, <http://dx.doi.org/10.1007/s11661-015-3220-x> (IF2016: 1,874)

13.

T. Gancarz, Physical, thermal, mechanical properties and microstructural characterization of Sn-9Zn-XGa alloys, Metall. Mater. Trans. A 47 (2016) 326-333,
<http://dx.doi.org/10.1007/s11661-015-3235-3> (IF2016: 1,874)

14.

T. Gancarz, G. Cempura, W. Skuza, Characterization of ZnAl cast alloys with Na addition, Mater. Charact. 111 (2016) 147-153 <http://dx.doi.org/10.1016/j.matchar.2015.11.025> (IF2016: 2,714)

15.

T. Gancarz, The effect of aging temperature on the phenomena occurring at the interface of solder SnZn with Na on Cu substrate, Mater. Letter. 171 (2016) 187-190,
<https://doi.org/10.1016/j.matlet.2016.02.066> (IF2016: 2,572)

16.

M. Trybula, **T. Gancarz**, W. Gasior, Density, surface tension and viscosity of liquid binary Al-Zn and ternary Al-Li-Zn alloys, Fluid Phase Equilibr. 421 (2016) 39-48,
<http://dx.doi.org/10.1016/j.fluid.2016.03.013> (IF2016: 2,473)

17.

T. Gancarz, P. Bobrowski, J. Pstrus, S. Pawlak, Thermal and mechanical properties of lead-free SnZn-xNa casting alloys, and interfacial chemistry on Cu substrates during the soldering process, J. Alloy Compd. 679 (2016) 442-453
<http://dx.doi.org/10.1016/j.jallcom.2016.04.040> (IF2016: 3,133)

18.

T. Gancarz, P. Fima, Wetting and Interfacial Chemistry of Sn-Zn-Ga Alloys with Cu Substrate, J. Mater. Eng. Perform. 25 (2016) 3358-3365,
<http://dx.doi.org/10.1007/s11665-016-2029-0> (IF2016: 1,331)

19.

T. Gancarz, J. Pstrus, K. Berent, Interfacial reactions of Zn-Al alloys with Na addition on Cu

substrate during spreading test and after aging treatments, J. Mater. Eng. Perform. 25 (2016) 3366-3374, <http://dx.doi.org/10.1007/s11665-016-2075-7> (IF2016: 1,331)

20.

K. Berent, J. Pstruś, T. Gancarz, Thermal and microstructure characterization of Zn-Al-Si cast alloys and chemical reaction with Cu substrate during spreading, J. Mater. Eng. Perform. 25 (2016) 3375-3383, <http://dx.doi.org/10.1007/s11665-016-2074-8> (IF2016: 1,331)

21.

T. Gancarz, G. Cempura, Characterization of ZnAl cast alloys with Li addition, Mater. Des. 104 (2016) 51-59 <http://dx.doi.org/10.1016/j.matdes.2016.05.019> (IF2016: 4,364)

22.

T. Gancarz, Density, surface tension and viscosity of liquid ZnAl + X (X = Li, Na, Si) alloys, Fluid Phase Equilibr. 427 (2016) 97-103, <http://dx.doi.org/10.1016/j.fluid.2016.06.045> (IF2016: 2,473)

23.

T. Gancarz, J. Pstruś, G. Cempura, K. Berent, The influence of Li addition to ZnAl alloys on Cu substrate during spreading test and after aging treatment, J. Electron. Mater. 45 (2016) 6067-6078, <http://dx.doi.org/10.1007/s11664-016-4815-8> (IF2016: 1,579)

24.

T. Gancarz, Density, surface tension and viscosity of Sn-Zn alloys with Ag, Bi, Ga and Na additions, Fluid Phase Equilibr. 441 (2017) 72-77, <http://dx.doi.org/10.1016/j.fluid.2016.10.031> (IF2017: 2,197)

25.

T. Gancarz, The physicochemical properties of liquid Ga-Zn alloys, Fluid Phase Equilibr. (2017), 442 (2017) 119-124, <http://dx.doi.org/10.1016/j.fluid.2017.03.025> (IF2017: 2,197)

26.

J. Pstrus, P. Ozga, **T. Gancarz**, K. Berent, The effect of graphene layers on the phenomena occurring at the interface of Sn-Zn-Cu solder - Cu substrate, J. Electron. Mater. 46 (2017) 5248-5258, <http://dx.doi.org/10.1007/s11664-017-5529-2> (IF2017: 1,566)

27.

T. Gancarz, Density, surface tension and viscosity of Ga-Sn alloys, J. Mol. Liq. 241 (2017) 231-236, <https://doi.org/10.1016/j.molliq.2017.06.002> (IF2017: 4,513)

28.

J. Pstrus, **T. Gancarz**, P. Fima, Effect of Indium Additions on the Formation of Interfacial In-termetallic Phases and the Wettability Sn-Zn-In/Cu Interfaces, Adv. Mater. Sci. Eng. (2017) Article ID 9756769, <http://dx.doi.org/10.1155/2017/9756769> (IF2016: 1,299)

29.

A. Debski, B. Onderka, W. Gasior, **T. Gancarz**, Phase equilibria in the Bi-In-Sn-Zn system. Thermal analysis vs. Calculations, Arch. Metall. Mater. 62 (2017), 4, 1945-1955, <http://dx.doi.org/10.1515/amm-2017-0292> (IF2017: 0,625)

30.

T. Gancarz, P. Bobrowski, S. Pawlak, N. Schell, R. Chulist, K. Janik, Wetting of Sn-Zn-Ga and Sn-Zn-Na Alloys on Al and Ni Substrate, J. Electron. Mater. 47 (2018) 49-60, <http://dx.doi.org/10.1007/s11664-017-5791-3> (IF2017: 1,566)

31.

T. Gancarz, J. Jourdan, W. Gasior, H. Henein, Physicochemical properties of Al, Al-Mg and Al-Mg-Zn alloys, J. Mol. Liq. 249 (2018) 470-476, <http://dx.doi.org/10.1016/j.molliq.2017.11.061> (IF2017: 4,513)

32.

A. Dobosz, **T. Gancarz**, Reference Data for the Density, Viscosity and Surface Tension of Liquid Al-Zn, Ag-Sn, Bi-Sn, Cu-Sn and Sn-Zn Eutectic Alloys, J. Phys. Chem. Ref. Data 47 (2018) 013102, <https://doi.org/10.1063/1.5010151> (IF2017: 3,510)

33.

T. Gancarz, K. Berent, J. Pstrus, Interfacial reactions of Sn-Zn-Ag-Cu alloy on soldered Al/Cu and Al/Al joints, *Sci. Technol. Weld. Joi.* 23 (2018) 558-567
<https://doi.org/10.1080/13621718.2018.1427836> (IF2017: 1.936)

34.

A. Dobosz, Y. Plevachuk. V. Sklyarchuk, B. Sokoliuk, **T. Gancarz**, Thermophysical Properties of the Liquid Ga-Sn-Zn Eutectic Alloy, *Fluid Phase Equilibr.* 465 (2018) 1-9,
<https://doi.org/10.1016/j.fluid.2018.03.001> (IF2017: 2,197)

35.

T. Gancarz, K. Berent, W. Skuza, K. Janik, Soldering of Mg joints using Zn-Al solders, *Mater. Trans. A* 49 (2018) 2684-2691 <https://doi.org/10.1007/s11661-018-4617-0> (IF2017: 1,887)

36.

T. Gancarz, W. Gasior, Density, Surface Tension and Viscosity of liquid Pb-Sb alloys, *J. Chem. Eng. Data* 63 (2018) 1471-1479, <https://doi.org/10.1021/acs.jced.7b01049> (IF2017: 2.196)

37.

A. Dobosz, Y. Plevachuk. V. Sklyarchuk, B. Sokoliuk, **T. Gancarz**, The application of liquid metals in cooling systems: A study of the thermophysical properties of eutectic Ga-Sn-Zn with Al additions, *Int. J. Heat Mass Tran.* 126 (2018) 414-420
<https://doi.org/10.1016/j.ijheatmasstransfer.2018.05.045> (IF2017: 3,891)

38.

T. Gancarz, K. Berent, The applications of Cu substrate in liquid metal cooling systems, *Ma-ter. Letter.* 227 (2018) 116-119) <https://doi.org/10.1016/j.matlet.2018.05.053> (IF2017: 2,687)

39.

A. Dobosz, **T. Gancarz**, Density, surface tension and viscosity of Ga-Sn eutectic alloys with

Zn additions, J. Mol. Liq. 264 (2018) 600-606 <https://doi.org/10.1016/j.molliq.2018.05.047> (IF2017: 4,513)

40.

A. Dobosz, **T. Gancarz**, Thermophysical properties of Ga-Zn eutectic alloys with Sn additions, Fluid Phase Equilibr. 474 (2018) 6-13 <https://doi.org/10.1016/j.fluid.2018.07.008> (IF2017: 2,197)

41.

T. Gancarz, K. Mech, J. Guspiel, K. Berent, Corrosion studies of Li, Na and Si doped Zn-Al alloy immersed in NaCl solutions, J. Alloy Compd. 767 (2018) 1225-1237 <https://doi.org/10.1016/j.jallcom.2018.07.109> (IF2017: 3,779)

42.

A. Dobosz, Y. Plevachuk, V. Sklyarchuk, B. Sokoliuk, **T. Gancarz**, The thermophysical properties of eutectic Ga-Sn-Zn with In additions, J. Mol. Liq. 271 (2018) 942-948, <https://doi.org/10.1016/j.molliq.2018.09.006> (IF2017: 4,513)

43.

A. Dobosz, Y. Plevachuk, V. Sklyarchuk, B. Sokoliuk, O. Tkach, **T. Gancarz**, Liquid Metals in High-Temperature Cooling Systems: The Effect of Bi Additions for the Physicochemical Properties of Eutectic Ga-Sn-Zn, J. Chem. Eng. Data 64 (2019) 404-411, <https://doi.org/10.1021/acs.jced.8b00519> (IF2017: 2.196)

44.

A. Dobosz, T. Daeneke, A. Zavabeti, B. Yue Zhang, R. Orrell-Trigg, K.h Kalantar-Zadeh, A. Wojcik, W. Maziarz, **T. Gancarz**, Investigation of the surface of Ga-Sn-Zn eutectic alloy by the characterisation of oxide nanofilms obtained by the touch-printing method, Nanomater. 9 (2019) 235, <https://doi.org/10.3390/nano9020235> (IF2017: 3,504)

45.

A. Dobosz, Y. Plevachuk, V. Sklyarchuk, B. Sokoliuk, O. Tkach, **T. Gancarz**, Liquid metals in cooling systems: Experimental design of thermophysical properties of eutectic Ga-Sn-Zn alloy with Pb additions, J. Mol. Liq. 281 (2019) 542-548 <https://doi.org/10.1016/j.molliq.2019.02.121>

(IF2017: 4,513)

Research Projects

Projects from Ministry of Science and Higher Education

-
Project 630/NKanada/2009/0 *New method for simultaneous measurements of the surface tension, density and viscosity of solders and new alloys for automotive industry*, IMMS PAS, investigator, 2009-2014

-
Project 2013/09/D/ST8/03991 *Physicochemical properties of Sn-Zn + (Ga, Na) alloys*, project leader 2014-2017

-
Project IP2014 011473 "Efect of addition Na, Li and Si to eutectic ZnAl alloys on phenomena occurring at the interface of soldered joints", project leader 2015-2017

-
Project 2016/21/B/ST8/00324, "Design and physicochemical, thermal properties of low temperature metal alloys based on gallium" project leader 2017-2019

European Union Projects

-
ZAMAT. Advanced materials and their production technologies, Advanced materials and their production technologies. Project jointly financed by European Union and Poland, POIG.01.01.02-00-015/09-00, IMMS PAS, participant, 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 POIG.02.01.00-12-175/09), IMMS PAS, project coordinator, 2011-2014

Common research within the scientific network

-
Advance Solders Materials, participant, IMMS PAS, 2006-2007.

Experience gained abroad

University of Alberta, Edmonton, Canada, 2008 (5 months),

University of Alberta, Edmonton, Canada, 2013 (1 month),

University of Alberta, Edmonton, Canada, 2013 (2 weeks)

University of Udine, Udine, Italy, 2015 (1 weeks) ERASMUS+ scholarship.

Training and awards

Individual training on Netzsch DSC 404 F1, Krakow, 9 June 2011

Individual training on Netzsch TMA 402 F1, Selb, Germany, 5 August 2011

Best poster price EUROMAT, Montpellier, France, September 2011

IMMS PAS Director Award for fifth place in the evaluation of scientific research achievements for 2015-2016

IMMS PAS Director Award for second place in the group of young researchers in the evaluation of scientific research achievements for 2015-2016

Main scientific interest

Research areas: physicochemical, thermodynamic, electrical and mechanical properties of alloys and composites; new lead-free solders and the reactions occurring between the liquid

metal and the substrate, also IMPs; new area of interest are liquid metal coolants in nuclear reactors.