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Employment and positions

Institute of Metallurgy and Materials Science, Polish Academy of Sciences: metallurgist 2005, assistant 2009, assistant professor 2013, associate professor 2017, professor since 2024

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

Prof. - President of the Republic of Poland, Scientific title, 2024

Scientific achievements

120 papers, **71** of them cited by the Journal Citation Reports

The most relevant publications during last 5 years

1.
1.

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 (IF2019: 2.369)

2.

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 (IF2019: 4,324)

3.

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 al-loy with Pb additions*
,
J. Mol. Liq. 281 (2019) 542-548 https://doi.org/10.1016/j.molliq.2019.02.121 (IF2019: 5.065)

4.

A. Dobosz, Y. Plevachuk. V. Sklyarchuk, B. Sokoliuk, **T. Gancarz**, *The influence of Li on the thermophysical properties of liquid Ga-Sn-Zn eutectic alloys*
, J. Mater. Sci-Mater. El. 30 (2019) 18970-18980, https://doi.org/10.1007/s10854-019-02254-4 (IF2019: 2,220)

5.

T. Gancarz, K. Berent, N. Schell, R. Chulist, *Interfacial phenomena between liquid Ga-based alloys and Ni substrate* , J. Electron. Mater. 48 (2019) 5941-5947, https://doi.org/10.1007/s11664-019-07356-7 (IF2019: 1,774)

6.

A. Dobosz, Y. Plevachuk. V. Sklyarchuk, B. Sokoliuk, **T. Gancarz**, *Potential cooling agents for fast nuclear reactors: Sodium influence on the thermophysical properties of liquid Ga-Sn-Zn eutectic alloys* , J. Mol. Liq. 296 (2019) 112024, https://doi.org/10.1016/j.molliq.2019.112024 (IF2019: 5.065)

7.

A. Dobosz, K. Berent, A. Bigos, **T. Gancarz**, *Interfacial phenomena between liquid alloy and Ni substrate covered by Ni-W layer* , Mater. Letter. 277 (2020) 128299, https://doi.org/10.1016/j.matlet.2020.128299 (IF2020: 3.423)

8.

A. Dobosz, **T. Gancarz**, *Density, viscosity and surface tension of gallium rich Al-Ga alloys*, Fluid Phase Equilibr. 532 (2021) 112923, https://doi.org/10.1016/j.fluid.2020.112923 (IF2021: 2.745)

9.

T. Gancarz, A. Dobosz, A.-A. Bogno, G. Cempura, N. Schell, R. Chulist, H. Henein, *Characterization of rapidly solidified Al-Mg-Sc alloys with Li addition*
, Mater. Charact. 178, 111290, https://doi.org/10.1016/j.matchar.2021.111290 (IF2021: 4.537)

10.

A. Dobosz, R. Novakovic, **T. Gancarz**, *Liquid metals: thermophysical properties of alloys from the Ga-Sn-Zn system* , J. Mol. Liq. 343 (2021) 117646, https://doi.org/10.1016/j.molliq.2021.117646 (IF2021: 6.633)

11.

A. Dobosz, A. Wojcik, M. Marzec, P. Ozga, **T. Gancarz**, *Nanometric Al2O3 Layers Ob-tained from Liquid Metals: Implications for Sensing Devices*
, ACS Applied Nano Materials 5 (2022) 430-437, https://doi.org/10.1021/acsanm.1c03271 (IF2021: 6.140)

12.

Stephan Handschuh-Wang, **Tomasz Gancarz**, Sergey Uporov, Tao Wang, Eryuan Gao, Flo-rian J. Stadler, Xuechang Zhou, *A Short History on Fusible Metals and Alloys - Towards Room Temperature Liquid Metals*
, Eur. J. Inorg. Chem. (2022) e202200313, https://doi.org/10.1002/ejic.202200313 (IF2021: 2.551)

13.

T. Gancarz, *The thermophysical properties of Bi-Ga alloys*, J. Mol. Liq. 363 (2022) 119912, https://doi.org/10.1016/j.molliq.2022.119912 (IF2021: 6.633)

14.

T. Gancarz, P. Ozga, J. Pstrus, Z. Swiatek, P. Czaja, A. Dybeł, K. Berent, *The Interfacial Phenomena Between Graphene on Cu Substrate Covered by Ni, Cu, or W Layer, with Liquid Ga-Sn-Zn Alloy* , J. Mater. Eng. Perform. 32 (2023) 5703-5709, https://doi.org/10.1007/s11665-023-08022-0 (IF2023: 2.2)

15.

A. Trelka, **T. Gancarz**, W. Zorawski, P. Petrzak, A. Goral, *The mechanical and tribological properties of cold sprayed cermet coatings - Al alloy substrate systems*
, J. Therm. Spray Techn. 32 (2023) 1714-1727, https://doi.org/10.1007/s11666-023-01590-6 (IF2023: 3.2)

16.

T. Gancarz, *The thermophysical properties of Ga-Pb liquid alloys*, J. Mol. Liq. 390 (2023) 122979, https://doi.org/10.1016/j.molliq.2023.122979, (IF2023: 5.3)

17.

S. Handschuh-Wang, T. Wang, **T. Gancarz**, X. Liu, B. Wang, B. He, M. D. Dickey, G. W. Wimmer, F. J. Stadler, *The liquid metal age: A transition from Hg to Ga* ,
Adv. Mater. 2024 DOI: 10.1002/adma.202408466 (IF2023: 27.4)

Research Projects

Projects from Ministry of Science and Higher Education

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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

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

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

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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

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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

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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

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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.

Prizes and awards

2022 and 2023 on the list of top 2% most cited scientists published by Stanford University and Elsevier

2019 The scientific award of the head of the Polish Academy of Sciences for a series of 12 papers on the verification of key issues related to the physicochemical properties of liquid metals at room temperature based on gallium

2019 Three-year fellowship for outstanding young scientists granted by the Ministry of Science and Higher Education

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

IMMS PAS Director Award for second place in the evaluation of scientific research achievements for 2017-2018

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. Liquid metal at room temperature.