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Employment and positions

Institute of Metallurgy and Materials Science, Polish Academy of Sciences: Associate Professor.

Scientific Career

M.Sc.: University of Silesia in Katowice, Institute of Physics, 1977

Ph.D.: Warsaw Institute of Technology, Institute of Physics, 1992

D.Sc.: Institute of Metallurgy and Materials Science, Polish Academy of Sciences, 2012

Scientific achievements

137 papers, among them: 60 papers in refereed journals and periodicals (45 of them citetd by the Institute for Scientific Information in Philadephia), 74 presentations during conferences, 1 monograph and 6 chapters in books.

The most relevant publications during last 5 years

1.

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., 2015, 73, str. 563-571

2.

Z. Starowicz , G. Kulesza-Matlak, **M. Lipiński,** Optimization Studies on Enhanced Absorption in Thin Silicon Solar Cell by Plasmonic Silver Nanoparticles for the Front Side Configuration, PLASMONICS 2015, 10, str.1639-1647

3.

S. Kluska, K. Hejduk, K. Drabczyk, **M. Lipiński**, Optical properties and passivation, Physica Status Solidi A effects of silicon nitride three layer stacks deposited by plasma enhanced chemical vapor deposition, 2016, 213, str. 1839-1847.

4.

K. Drabczyk, E. Wrobel, G. Kulesza-Matlak, W. Filipowski, K. Waczynski, **M. Lipiński**, Comparison of diffused layer prepared using liquid dopant solutions and pastes for solar cell with screen printed electrodes, Microelectronics International, 2016, 33, 172-175.

5.

K. Drabczyk, G. Kulesza-Matlak, A. Drygała, M. Szindler, **M. Lipiński**, Electroluminescence imaging for determining the influence of metallization parameters for solar cell metal contacts, Solar Energy, 2016, 126, 14-21.

6.

Z. Starowicz, A. Kędra, K. Berent, K. Gawlińska, K. Gwóźd, E. Zielony, G. Kulesza-Matlak, R.P. Socha, K. Drabczyk, E. Płaczek-Popko, **M. Lipiński**, Influence of Ag nanoparticles microstructure on their optical and plasmonic properties for photovoltaic applications, Solar Energy 158 (2017) 610-616.

7.

M. Lipiński, R.P. Socha, A. Kędra, K. Gawlińska, G. Kulesza-Matlak, Ł. Major, K. Drabczyk, K. Łaba, Z. Starowicz, K. Gwóźdź, A. Góral, E. Popko, Studying of perovskite nanoparticles in PMMA matrix used as light converter for silicon solar cell, Arch. Metall. Mater. 62 (2017), 3, 17331-1739.

8.

K. Gawlinska, A. Iwan, Z. Starowicz, Grazyna Kulesza-Matlak , K. Stan-Glowinska , M. Janusz, **M. Lipinski**
, B. Boharewicz, I. Tazbir, A. Sikora, Searching of new, cheap, air- and thermally stable hole transporting materials for perovskite solar cells, Opto-Electronics Review 25 (2017) 274-284.

9.

J. Suchanicz, K. Konieczny, K. Świerczek, **M. Lipiński**, M. Karpierz, D. Sitko, H. Czternastek, K. Kluczewska, Electrical transport in low-lead (1-x)BaTiO3-xPbMg1/3Nb2/3O3 ceramics, Journal of Advanced Ceramics 2017, 6(3): 207-219.

10.

G. Kulesza-Matlak, K. Gawlińska-Nęcek, Z. Starowicz, A. Sypień, K. Drabczyk, B. Drabczyk, **M. Lipiński**, P. Zięba, Black silicon obtained in two-step short wet etching as a texture for silicon solar cells - surface microstructure and optical properties studies, Archives of Metallurgy and Materials, 2018, 63, 1009-1017.

11.

Z. Starowicz, K. Gawlińska-Nęcek, J. Walter, R.P. Socha, G. Kulesza-Matlak, **M. Lipińsk**i, Extended investigation of sol aging effect on TiO2 electron transporting layer and performances of perovskite solar cells, Materials Research Bulletin, 2018, 99, 136-143.

12.

K. Gawlinska-Necek, Z. Starowicz, D. Tavgeniene, G. Krucaite, S. Grigalevicius, E. Schab-Balcerzak, **M. Lipinski**, A solution-processable small-organic molecules containing carbazole or phenoxazine structure as hole-transport materials for perovskite solar cells, OPTO-ELECTRONICS REVIEW, 2019, 27(2), 137-142.

13.

S. Kula, A.Pająk, A. Szlapa-Kula, A. Mieszczanin, A P. Gnida, **M. Lipinski**, E. Schab-Balcerzak, 9,9 '-bifluorenylidene derivatives as novel hole-transporting materials for potential photovoltaic applications, DYES AND PIGMENTS, 2020, 174, 108031, DOI: doi.org/10.1016/j.dyepig.2019.108031

Chapters in monographs during last 5 years

1.

M. Lipiński, *Charakterystyka ogniw słonecznych, w: Problemy Metrologii Elektronicznej i Fotonicznej 9* . Praca zbiorowa pod redakcją Janusza Mroczki, ISBN

978-83-7493-029-1, 2018, pp. 131-202

2.

M. Lipiński, P. Zięba, *Stan obecny i perspektywy rozwoju ogniw perowskitowych, Biała Księga Innowacji w Fotowoltaice Polskiej* , Praca pod redakcją Dr. inż. K. Drabczyka, 97-111.

3.

M. Lipiński, G. Kulesza-Matlak, K. Drabczyk, P. Panek, Z. Starowicz, K. Gawlińska, P. Zięba, *Materiały i technologie dla fotowoltaiki* , 65 lat Instytutu Metalurgii i Inżynierii Materiałowej im. Aleksandra Krupkowskiego Polskiej Akademii Nauk, 1952-2017, rozdział w monografii, Kraków 2017, s. 247-267.

4.

K. Drabczyk, J. Domaradzki, M. Godlewski, D. Kaczmarek, **M. Lipiński**, M. Mazur, A. Michałek, K. Sieradzka, T. Stapiński, D. Szymonik, D. Wojcieszak, P. Zięba, *Biała księga innowacji w fotowoltaice polskiej* , Praca zbiorowa pod redakcją Kazimierza Drabczyka, ISBN 978-83-60768-49-5, Grafpol Wrocław 2018, pp. 140

Patents

Patent no. 21397 for the invention:The method of crystalline silicon surface texturization, 27.01.2010.

Prizes and awards

2013 - **Siemens Special Award** granted at the request of the Jury of 06.05.2013 for the

habilitation thesis: " *The influence of physical properties of the subsurface layers and areas on operational parameters of silicon solar cell* ."

2017 - Silver Cross of Merit.

Research Projects

Projects from Ministry of Science and Higher Education

- Designing and production of functionally graded materials (Project No. PBZ-KBN 100/TO8-2003): Subject 1: Designing and technology elaboration of functionally graded materials for the application in fotonics and fuel cells, Task 2: Elaboration of technology of antireflection gradient coatings in silicon solar cells, IMMS PAS, task leader of task 2, 2004-2007

- Neutron doped multicrystalline silicon applied for solar cells, (Project No. N508 04831/2569), IAE (Świerk), task leader, 2006-2008.

- The characterisation of the multicrystalline silicon modified with processes of gettering and passivation for the photoelectric cells applications, (Project No. N N515 088 433), participant, IET (Warsaw), 2007-2009

- Elaboration of the passivation technology of crystallographic defects in polycrystalline silicon and silicon nano-particles creation by SiNx:H layers application to broaden spectral sensitivity of

the photocells. (Project No. N N507 444234), IMMS PAS, supervisor, 2008-2010

Projects from National Centre for Science

-

Synthesis and characterizing new materials for perovskite solar cells, Project funded under „OPUS", consortium IMIM PAN -UŚl in Katowice, 2018/31/B/ST8/03294, supervisor, 2019 - 2022.

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Investigation of influence of metal and semiconductor nanoparticles on opto-electronic properties of composite materials, Project funded under „OPUS", 2012/05/B/ST8/00087, IMIM PAS, supervisor, 2012-2016

Projects from National Centre for Research and Development

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PV-In-line processing of n+/p and p/p+ junction systems for cheap photovoltaic module production (Inline), Polish-Norwegian Research Programme, No. POL-NOR/199380/89/2014, participant, (2014-2016)

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Isothermal and refrigeration photovoltaic car body (WOLTER), GEKON Programme - Generator of Ecological Concepts, participant, (2014-2016)

Common research within the scientific network

-

EKOENERGIA- New ecological and save technologies in energy production and conversion, IMP PAS, participant, 2006-2007

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PV-TECH- Development of new technologies and research techniques for silicon solar cells, IMMS PAS, participant, 2008

International exchange programmes

-

Application of macroporous silicon to silicon solar cells, Laboratoire de Chimie Metallurgique des Terres Rares, CNRS, Thiais, Francja, 2003-2005.

-

Analyse et élaboration de couches de nitrure de silicium pour application photovoltaïques, Laboratoire Physique de la Matiere - I.N.S.A, Regional Project MIRA, Lyon, 2006 -2007

Structural Funds

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Operational Programme Human Capital, co-financed by European Social Fund, Dissemination of Polish and world achievements in photovoltaics in the education process at high level (No. UDA-POKL.04.02.00-00-053/08-00), IMMS PAS, participant, 2009-2010

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Operational Programme Human Capital, co-financed by European Social Fund, Dissemination of Polish and world achievements in photovoltaics in the education process at high level - II Edition (No. UDA-POKL. 04.02.00-00-006/09-00), IMMS PAS, participant, 2010-2011

Experience gained abroad

French Government Scholarship: Laboratoire Physique du Solide et Energie Solaire, C.N.R.S, Valbonne, Laboratoire Physique de la Matiere, I.N.S.A, Lyon 1987-1988 (8 months)

Laboratoire PHASE-CNRS, Strasbourg, Francja, 1992 (3 months)

Some shorter visits:

Laboratoire de Photoélectricité des Semiconducteurs, Univ.,Maresille, Francja, 1992 (2 weeks),

Laboratoire PHASE- CNRS, Strasbourg, Francja, 1992 (2 weeks)

Institut für Physikalische Elektronik, Universität Stuttgart, Stuttgart, Niemcy, 2007, (1 week)

Main scientific interest

Solar cell device physics and technology, third generation photovoltaics, nanotechnology, plasmonics, nanostructured materials, perovskite solar cells