

DSc. Ph.D. Eng. Katarzyna Matras-Postolek, prof. of CUT



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Place of employment/
Position

Since 01. 2021 Cracow University of Technology (CUT), Faculty of Chemical Engineering and Technology, Poland, Vice-dean for Evaluation and International Cooperation
since 10. 2019 Cracow University of Technology (CUT), Faculty of Chemical Engineering and Technology, Poland, professor of CUT;
07. 2013 – 09. 2019 Cracow University of Technology (CUT), Faculty of Chemical Engineering and Technology, Poland, adjunct professor;
since 09.2014 **University of Jinan**, School of Material Science and Engineering, China, visiting professor;
02. 2006-07. 2013 **Münster University of Applied Sciences**, Steinfurt, Germany, researcher;

Qualification level

2019 Rzeszow University of Technology, The Faculty of Chemistry, Poland Habilitation in Chemistry;
2015 **Haas School of Business Executive, University of California Berkeley, USA;**
2004 - 2010 International PhD Studies at the Institute of Catalysis and Surface Chemistry Polish Academy of Sciences and CUT - Ph.D. in Chemistry;
1999 – 2004 Cracow University of Technology - M.Sc. Eng. in Chemistry;

Professional experience and achievements

Total Articles in JCR List:	44	patents	3
Total IF	125.5	patent applications	11
H-index:	12		

Selected projects:

1. Lider, NCBiR, *Organo-inorganic functional nanomaterials for printed optoelectronics 2D and 3D*, LIDER/009/185/L-5/13/NCBR/2014, CUT, 2015 -2019, (budget 275 000 Euro), **project manager;**
2. Homing Plus, FNP, *Novel ZnS(Se) hybrid polymer nanocomposites for optoelectronic application*, HOMINGPLUS/2012-6/5, CUT, 2013 -2015, (budget 87 000 Euro), **project manager;**
3. Bundesland NRW, *Herstellung hydrophober selbstdispersierender ZnS-Nanopartikel für druckbare optoelektronische Nanokompositschichten, no. 290010702*, Münster University of Applied Sciences/Evonik Creavis Nanotronics, Marl, Germany 2009-2011, contractor of the grant;
4. *Nanoskalige Schichtstrukturen für die Elektrolumineszenz - nano-EL*, Münster University of Applied Sciences/Evonik Creavis Nanotronics, Marl, Germany, 2006 –2009 , the contractor of the grant;

Selected awards and scholarships:

1. The member of the scientific committee of the organization Association for Microwave Power in Europe for Research and Education (AMPERE) in Europe;
2. **Scholarship of the Minister of Science and Higher Education in Poland for Outstanding Young Scientists (2016/2019);**
- 3 **The title of honorary guest professor at the University of Jinan, School of Material Science and Engineering (2014);**
4. Gold medal at the 43 International Exhibition of Invention, Modern Technology and Products Geneva Inventions (2015);
5. Laureate of the TOP 500 Innovators Program, Ministry of Science and Higher Education (2015);
6. **Scientific Scholarship for Polish PhD students staying in Germany DAAD (2007);**
7. Scientific scholarship for PhD students from the Fund for Stanisława Pigonia of the Jagiellonian University (2005/2006);

List of selected publications:

1. K. Matras-Postolek, S. Sovinska, A. Węgrzynowicz *Synthesis and characterization of ZnSe and ZnSe:Mn nanosheets and microflowers with high photoactive properties by microwave-assisted method*, **Chem. Eng. Process.** 135, 2019, 204-216;
2. K. Matras-Postolek, A. Żaba, E. M. Nowak, P. Dąbczyński, J. Rysz, J. Sanetra, *Formation and characterization of one-dimensional ZnS nanowires for ZnS/P3HT hybrid polymer solar cells with improved efficiency*, **Appl. Surf. Sci.**, 451, 2018, 180-190;
3. M. Li, X. Zhang, K. Matras-Postolek, et al., *An anion-driven Sr^{2+} exchange reaction in CsPbBr₃ nanocrystals towards tunable and high photoluminescence*, **J. Mater. Chem. C**, 2018,6, 5506-5513
4. K. Matras-Postolek et al. *Luminescent ZnSe:Mn/ZnS@PMMA nanocomposites with improved refractive index and transparency* **J. Lumin.**, 203, 2018, 655-662
5. C. Jia, X. Zhang, K. Matras-Postolek, B. Huang, P. Yang, *Z-scheme reduced graphene oxide/TiO₂-Bronze/W₁₈O₄₉ ternary heterostructure towards efficient full solar-spectrum photocatalysis*, **Carbon**, 2018, 139, 415-426
- 6 M. Oćwieja, K. Matras-Postolek, et al. *Formation and stability of manganese-doped ZnS quantum dot monolayers determined by QCM-D and streaming potential measurements*, **J. Colloid Interface Sci.**, 503, 2017, 186-197;
7. C. Jia, P. Yang, J. Li, B. Huang, K. Matras-Postolek *Photocatalytic Activity Evolution of Different Morphological TiO₂ Shells on Ag Nanowires*, **ChemCatChem**, 2016, 18, 4, 839-847,
8. S. Lu, L. Chen, P. Yang, K. Matras-Postolek, *Highly sensitive visual detection of catalase based on the accelerating decomposition of H₂O₂ using Au nanorods as a sensor*, **RSC Adv.**, 2016, 6, 19620-19625
9. S. Zhang, H.-S. Chen, K. Matras-Postolek, P. Yang *ZnO nanoflowers with single crystal structure towards enhanced gas sensing and photocatalysis*, **Phys. Chem. Chem. Phys.**, 2015, 17, 30300-30306;
10. Y. Liu, P. Yang, J. Li, K. Matras-Postolek, Y. Yuea, B. Huang *Formation of SiO₂@SnO₂ core-shell nanofibers and their gas sensing properties*, **RSC Adv.**, 2016, 6, 13371-13376;
11. Y. Liu, J. Wang, P. Yang, K. Matras-Postolek *Self-modification of TiO₂ one-dimensional nanomaterials by Ti³⁺ and oxygen vacancy using Ti₂O₃ as precursor*, **RSC Adv.**, 2015, 5, 61657-61663;
12. P. Yang, C. Jia, H. He, L. Chen, K. Matras-Postolek *Preparation and characteristics of molecularly homogeneous Ag/AgCl nano-heterostructures via a two-step synthesis*, **RSC Adv.**, 2015, 5, 17210-17215;
13. K. Matras-Postolek, D. Bogdal *Polymer Nanocomposites for Electro-Optics: Perspectives on Processing Technologies, Material Characterization, and Future Application*, **Adv. Polym. Science.** 2010, 230, 221-282;

14. M. Bredol, K. Matras, A. Szatkowski, J. Sanetra, A. Prodi-Schwab *P3HT/ZnS: a new hybrid bulk heterojunction photovoltaic system with very high open circuit voltage*, **Sol. Energy Mater. Sol. Cells** 2009, 93, 662-666;

List of selected patents:

1. A. Prodi-Schwab, D. Adam, Th. L uthge, M. Bredol, K. Matras, A. Szatkowski, *Luminescent nanoscale particles having hydrophobic surface finish, method for the production thereof and use thereof*, patent no. WO2009133138;

2. A. Prodi-Schwab, D. Adam, Th. L uthge, M. Bredol, K. Matras, A. Szatkowski, J. Sanetra, *Photovoltaic element for producing electricity, is made of polymer nanostructure nano-compound, and photoactive layer of photovoltaic elements*, patent no. DE102008001528;

3. K. Matras-Posto lek, S. Sovinska, *Spos b wytwarzania luminescencyjnych nanocza stek selenku cynku domieszkowanych atomami manganu, o dodatnim  adunku powierzchniowym*, patent no. PL233317

Research Interests:

- Nanomaterials
- Semiconductors
- Functional nanomaterials
- Photocatalysis
- Optoelectronics- and bio- application od nanomaterials