

Ewa Mijowska

X.Chen, K. Wenelska, B. Zielinska, S. Zhang, X. Shi, W. Kukulka, M. Baca, M. Trukawka, K. Cendrowski, X. Wen, R. J. Kalenczuk

Nanomaterials Physicochemistry Department, Faculty of Chemical Engineering, West Pomeranian University of Technology Szczecin, Piastów Ave. 42, Szczecin, Poland
Poland, Address, City, Country

emijowska@zut.edu.pl

Carbon based nanostructures - thermal , electrochemical, adsorption, photocatalytical response.

In our research we aim at designing, synthesis and physicochemical properties of innovative carbon based nanostructures. The Department focus on the studies of challenging nanocomposites flame retardant and designing electrodes and adsorbents with emphasis on correlation between nanomaterials structure with highest capacity and efficient gas adsorption. Conducted research engage all efforts to broaden understanding of nanomaterials synthesis and properties along with the improved nanomaterials development process. The work is mainly focused on:

- improving the development of different polymer nanocomposites with high flame retardant, thermal conductivity and thermal stability by innovative admixtures like 2D molybdenum disulphide nanostructures functionalized with carbon nanotubes and metal oxides (e.g. Ni₂O₃ and Fe₂O₃) [1,],
- synthesis novel highly porous carbon nanostructures by carbonization of metal organic frameworks and their functionalization for applications such as gases and waste adsorbents, and for supercapacitors and Li-ion battery electrodes [2,3],
- design of different novel catalysts for photocatalysis in UV-Vis region.enhancing the highly porous carbon nanosphere electrochemical and gases adsorption properties by functionalization them with different inorganic nanomaterials e.g. metal oxides (iron oxide), metal (platinum/palladium) nanoparticles and graphene structures [4],
- nanomaterials waste-free synthesis for environmental friendly manufacturing [5].

Acknowledges: The authors are grateful for the financial support from the National Science Centre Poland with in the OPUS Project No. 2015/19/B/ST8/00648

References

- [1] K. Wenelska, E. Mijowska, New J. Chem., 2017,41, 13287-13292.
- [2] M. Biegun, X. Chen, E. Mijowska, CHEMELECTROCHEM, 5, 2018 Pages: 2681-2685
- [3] S. Zhang, X. Shi, D. Moszynski, T. Tang, P.K.Chu, X. Chen, E. Mijowska, Electrochimica Acta 269 (2018) 580-589
- [4] W. Konicki, M. Aleksandrak, D. Moszyński, E. Mijowska, Journal of Colloid and Interface Science 496, 2017,188–200
- [5] J. Gong, J. Liu, Z. Jiang, X. Chen, X. Wen, E. Mijowska, T. Tang, New J. Chem., 2017,41, 7791-7791