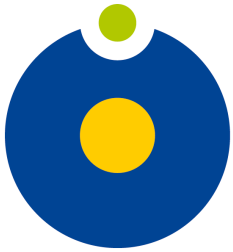

NICOLAUS COPERNICUS
UNIVERSITY
IN TORUŃ
Faculty of Chemistry

Department of Biomedical Chemistry and Polymers

Dr Marta Ziegler-Borowska

List of scientific or artistic achievements which present a major contribution to the development of a specific discipline

Field of science: natural sciences

Scientific discipline: chemical sciences

Torun 2022

List of scientific achievements making a significant contribution to the discipline of chemistry

I. INFORMATION ON SCIENTIFIC OR ARTISTIC ACHIEVEMENTS SET OUT IN ART. 219 PARA 1. POINT 2 OF THE ACT

Title of achievement:

Polysaccharide functionalized magnetic nanoparticles - synthesis, characterization, and biomedical applications

1. Cycle of scientific articles related thematically, pursuant to art. 219 para 1. point 2b of the Act , published after obtaining PhD degree in Chemistry;

9 papers, total IF= 50.248 (current); 970 pts. MNiSW (according to the Ministry of Science and Higher Education list as of 1 December 2021).

The basis for my application for a habilitation is a series of thematically coherent and related nine original scientific articles (eight co-authored papers, one independent paper) published between 2014 and 2020 in JCR-listed scientific journals (Q1-Q2) having an IF from the year publication ranging from 1.781 to 6.707 with a total number of citations (without self-citation) of 183. In six papers, I am the first and corresponding author: in two the first author and in one, the corresponding author. Four articles are the result of my ongoing NCN Sonata 8 grant**,** 2014/15/D/NZ7/01805, entitled Synthesis and study of the interaction of magnetic nanoparticles coated with human blood serum protein with selected drugs under normal and artificially induced oxidative stress conditions from 2015-2019**.**

The work contained in the achievement is monothematic and concerns the synthesis of novel polysaccharide-coated magnetic nanoparticles, their characterization, and biomedical applications.

H1. Marta Ziegler-Borowska*, Tomasz Siódmiak, Dorota Chełminiak, Aleksandra Cyganiuk, Michał P Marszałł. Magnetic nanoparticles with surfaces modified with chitosan-poly [N-benzyl-2-(methacryloxy)-N, N-dimethylethanaminium bromide]

for lipase immobilization, *Appl. Surf. Sci.,* **2014,** *288*, 641-648; doi: 10.1016/j.apsusc.2013.10.088
IF$_{2014}$ 2,711 ; IF$_{2021}$ 7,392; MNiSW points 140, Q1
14 citations without self-citation

My contribution to the publication consisted of planning and supervising the research, designing the structure of the PQ polymer and the magnetic nanoparticles coated with it, developing the method of synthesis, interpreting the results of the analyses and characterization of the material, and writing the entire manuscript on the synthesis and characterization of the magnetic nanoparticles, as well as the whole response to the reviews.

H2. Marta Ziegler-Borowska*, Dorota Chełminiak, Tomasz Siódmiak, Adam Sikora, Michał Piotr Marszałł, Halina Kaczmarek, Synthesis of new chitosan coated magnetic nanoparticles with surface modified with long-distanced amino groups as a support for bioligands binding. *Mat. Lett*., **2014**, *132*, 63-65; doi: 10.1016/j.matlet.2014.06.020
IF$_{2015}$ 2,489 ; IF$_{2021}$ 3,574 ; MNiSW points 70, Q2
14 citations without self-citation

My contribution to the publication consisted of planning and supervising the research, designing the structure of the modified chitosan coating the nanoparticles, developing the method, and optimizing its synthesis and coating the magnetic nanoparticles with it, optimising the synthesis of the nanoparticles as well as interpreting the analyses and characterising the material obtained, writing, editing the entire manuscript and responding to reviews.

H3. Marta Ziegler-Borowska, Dorota Chełminiak, Halina Kaczmarek*, Thermal stability of magnetic nanoparticles coated by blends of modified chitosan and poly (quaternary ammonium) salt. *J. Therm. Anal. Calorim*., **2015**, *119*, 499-506; doi: 10.1007/s10973-014-4122-7
IF$_{2015}$ 1.781 ; IF$_{2021}$ 4.755 ; MNiSW points 70, Q1
61 citations without self-citation

My contribution to the publication consisted of planning the research, designing the structure of the polymer coating covering the nanoparticles, planning, selecting the optimal conditions and carrying out their synthesis, characterisation of the material, writing the manuscript, and responding to reviews.

H4. Marta Ziegler-Borowska, Dorota Chełminiak, Halina Kaczmarek*, Anna Kaczmarek-Kędziera, Effect of side substituents on thermal stability of the modified chitosan and its nanocomposites with magnetite. *J. Therm. Anal. Calorim*.,**2016**, 124, 1267-1280; doi: 10.1007/s10973-016-5260-x

IF$_{2016}$ 1,953 ; IF$_{2021}$ 4,755 ; MNiSW points 70, Q1
40 citations without self-citation

My contribution to the publication consisted of the conception of the research, the design of the structure of the modified chitosan materials (CS-1, CS-2 and CS-3), the planning and optimisation of the conditions and performance of their synthesis, and characterisation of the material. I have planned, carried out and optimised the conditions for the synthesis of magnetic nanoparticles coated with modified chitosan materials, wrote the manuscript and responded to reviews.

H5. Marta Ziegler-Borowska*,* Dorota Chelminiak-Dudkiewicz, Tomasz Siódmiak, Adam Sikora, Katarzyna Wegrzynowska-Drzymalska, Joanna Skopinska-Wisniewska, Halina Kaczmarek, Michał P. Marszałł, Chitosan-Collagen Coated Magnetic Nanoparticles for Lipase Immobilization-New Type of "Enzyme Friendly" Polymer Shell Crosslinking with Squaric Acid. *Catalysts*, **2017,** *7*, 26; doi: 10.3390/catal7010026
IF$_{2017}$ 3,465 ; IF$_{2021}$ 4,501 ; MNiSW points 100, Q2
30 citations without self-citation

My contribution to the publication included planning and supervising all the research carried out under my NCN Sonata 8 grant; designing the composition of the polymer coatings covering the magnetic nanoparticles, designing the use of square acid as a cross-linking agent for collagen and chitosan, planning, optimising the and execution of the synthesis of the nanoparticles, characterisation of the nanoparticles, writing, editing the entire manuscript and responding to reviews.

H6. Marta Ziegler-Borowska*,* Magnetic nanoparticles coated with aminated starch for HSA immobilization-simple and fast polymer surface functionalization. *Int. J. Biol. Macromol.*, **2019**, *136*,106-114 ; doi: 10.1016/j.ijbiomac.2019.06.044
IF$_{2019}$ 5.162 ; IF$_{2021}$ 8.025 ; MNiSW points 100, Q1
8 citations without self-citation

H7. Marta Ziegler-Borowska*,* Kinga Mylkie, Mariana Kozlowska, Pawel Nowak, Dorota Chelminiak-Dudkiewicz, Anna Kozakiewicz, Anna Ilnicka, Anna Kaczmarek-Kedziera, Effect of Geometrical Structure, Drying, and Synthetic Method on Aminated Chitosan-Coated Magnetic Nanoparticles Utility for HSA Effective Immobilization. *Molecules*, **2019**, *24*, 1925; doi: 10.3390/molecules24101925
IF$_{2019}$ 3,267 ; IF$_{2021}$ 4,927; MNiSW points 140, Q2
3 citations without self-citation

My contribution to the publication consisted of planning and supervising all the research carried out under my NCN Sonata 8 grant, designing the magnetic nanoparticles, their synthesis and drying methods, planning the HSA

immobilisation methods, characterising, and interpreting the results and writing, editing the entire manuscript and responding to reviews.

H8. **Marta Ziegler-Borowska*,** Kinga Mylkie, Pawel Nowak, Patryk Rybczynski, Adam Sikora, Dorota Chelminiak-Dudkiewicz, Anna Kaczmarek-Kedziera, Testing for Ketoprofen Binding to HSA Coated Magnetic Nanoparticles under Normal Conditions and after Oxidative Stress. *Molecules*, **2020**, *25*, 1945; doi: 10.3390/molecules25081945
IF_{2020} 4.412, IF_{2021} 4.927; MNiSW points 140, Q2
3 citations without self-citation

My contribution to the publication consisted of planning and supervising all the research carried out under the NCN Sonata 8 grant that I managed, developing, and optimising the HSA immobilisation method, planning and optimising the HSA free-drug and HSA immobilised-drug interaction studies, interpreting the results obtained and writing, editing the entire manuscript and responding to the reviews.

H9. Dorota Chelminiak-Dudkiewicz, Patryk Rybczynski, Aleksander Smolarkiewicz-Wyczachowski, Dariusz T Mlynarczyk, Katarzyna Wegrzynowska-Drzymalska, Anna Ilnicka, Tomasz Goslinski, Michał P Marszałł, **Marta Ziegler-Borowska***, Photosensitizing potential of tailored magnetite hybrid nanoparticles functionalized with levan and zinc(II) phthalocyanine. *Appl. Surf. Sci.*, **2020**, *524*,146602; doi:10.1016/j.apsusc.2020.146602
IF_{2020} 6,707; IF_{2021} 7,392; MNiSW points 140, Q1
10 citations without self-citation

My contribution to the publication consisted of planning and supervising the research, designing the structure of the nanoparticles, optimising the conditions for synthesising the photosensitised magnetic nanoparticles, interpreting the results, and writing and editing the manuscript discussing with reviewers and responding to reviews.

II. INFORMATION ON SCIENTIFIC OR ARTISTIC ACTIVITY

1. List of published scientific monographs (including the monographs not mentioned in section I.1)

1.1 Anna Kaczmarek-Kedziera, Dariusz Kedziera, **Marta Ziegler-Borowska**, Computational chemistry in the organic laboratory, ISBN 977-83-231-3114-4, Scientific Publishing House of the Nicolaus Copernicus University, Toruń 2014.

Textbook, an item not listed in pt. I.1.

2. List of published chapters in scientific monographs

A total of 4 chapters after the PhD degree, total number of pts. MNiSW 80

2.1. Piotr Maćczak, Halina Kaczmarek, **Marta Ziegler-Borowska** , Investigations of the process of coagulation of wash waters at the water treatment station in Kutno, Na pograniczu chemii, biologii i fizyki, rozwój nauk. T. 1 / ed. nauk. Edward Szłyk; associate editors: Sylwia Grabska-Zielińska, Anna Kmieciak, Anna Filipiak-Szok. Toruń, Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika : **2020**.
MNiSW credits 20

2.2.Dorota Chełminiak-Dudkiewicz, Jakub Gauza, Patryk Rybczyński, Aleksander Smolarkiewicz-Wyczachowski, Katarzyna Węgrzynowska-Drzymalska, **Marta Ziegler-Borowska,** Magnetic nanoparticles with deposited zinc phthalocyanine as potential active substances used in photodynamic therapy (PDT), On the borderline of chemistry, biology and physics, Development of science. Vol. 1 / scientific ed. Edward Szłyk ; associate editors: Sylwia Grabska-Zielińska, Anna Kmieciak, Anna Filipiak-Szok. Toruń, Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika : **2020**, S. 25-38.
MNiSW credits 20

2.3 Katarzyna Węgrzynowska-Drzymalska, Dorota Chełminiak-Dudkiewicz, Halina Kaczmarek, **Marta Ziegler-Borowska**, Synthesis and study of photostability of nanocrystalline starch, On the borderland of chemistry, biology and physics, Development of science. T. 1 / scientific ed. Edward Szłyk ; associate editors: Sylwia Grabska-Zielińska, Anna Kmieciak, Anna Filipiak-Szok. Toruń, Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika : **2020**, S. 193-208.
MNiSW credits 20

2.4 Patrycja Grębicka, Katarzyna Węgrzynowska-Drzymalska, **Marta Ziegler-Borowska**, Synthesis of microcrystalline cellulose (MCC) coated with mesoporous TiO2, On the frontiers of chemistry, biology and physics, Scientific development. Vol. 1 / scientific ed. Edward Szłyk ; associate editors: Sylwia Grabska-Zielińska, Anna Kmieciak, Anna Filipiak-Szok. Toruń, Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika : **2020**, S. 69-86.
MNiSW credits 20

3. Information about membership in editorial boards preparing scientific monographs for publication

not applicable

4. List of articles published in scientific journals (including the articles not mentioned in section I.1)

4.1 Articles published prior to award the PhD degree in chemistry
(1 paper, total IF 1.257; MNiSW points 40 according to the list of 1 December 2021).

A1. Marek Zaidlewicz*, Joanna Cytarska, Adam Dzielendziak, **Marta Ziegler-Borowska,** Synthesis of boronated phenylalanine analogues with a quaternary center for boron neutron capture therapy. *Arkivoc*, **2004**, 3, 11-27.
IF_{2004} - 0, IF_{2020} 1.257, MNiSW points 40

4.2 Articles published after PhD degree in chemistry
(43 papers, total IF = 184.135 (current)**; pts. MNiSW 4070 according to the list of 1 December 2021).**

Items not listed in para. I.1 are designated A2., A3., ..., A35.
The articles forming part of the scientific achievement listed in sec. I.1. are designated as H1., ..., H9.

A2. Rafał Krakowiak, Robert Frankowski, Kinga Mylkie, Michał Kotkowiak, Dariusz T. Młynarczyk, Alina Dudkowiak, Beata Jadwiga Stanisz, Agnieszka Zgoła-Grześkowiak, **Marta Ziegler-Borowska**, Tomasz Gośliński*, Titanium(IV) oxide nanoparticles functionalized with variousmeso-porphyrins for efficient photocatalytic degradation of ibuprofen in UV and visible light, *J. Environ. Chem. Eng.* ,**2022**, 10 (5),1-17, DOI:10.1016/j.jece.2022.108432,
IF_{2021} 7.968 ; MNiSW points 100, Q1

A3. Katarzyna Węgrzynowska-Drzymalska, Dariusz T. Młynarczyk, Dorota Chełminiak-Dudkiewicz, Halina Kaczmarek, Tomasz Gośliński, **Marta Ziegler-Borowska**, Chitosan-gelatin films cross-linked with dialdehyde cellulose nanocrystals as potential materials for wound dressings, Int. J. Mol. Sci., **2022**, 23 (17), 1-28, DOI:10.3390/ijms23179700,
IF$_{2021}$ 6,208; MNiSW points 140, Q1

A4. Paweł Bakun, Beata Czarczyńska-Goślińska, Dariusz T. Młynarczyk, Marika Musielak, Kinga Mylkie, Jolanta Długaszewska, Tomasz Koczorowski, Wiktoria M. Suchorska, **Marta Ziegler-Borowska**, Tomasz Gośliński*, Gallic acid-functionalized, TiO2-based nanomaterial : preparation, physicochemical and biological properties, *Materials*, **2022,** 15(12,) , pp. 1-19,doi:10.3390/ma15124177,
IF$_{2021}$ 3.748; MNiSW points 140, Q2

A5. Katarzyna Wegrzynowska-Drzymalska, Kinga Mylkie, Pawel Nowak, Dariusz T. Mlynarczyk, Dorota Chelminiak-Dudkiewicz, Halina Kaczmarek, Tomasz Goslinski, **Marta Ziegler-Borowska***, Dialdehyde Starch Nanocrystals as a Novel Cross-Linker for Biomaterials Able to Interact with Human Serum Proteins. *Int. J. Mol. Sci*., **2022**; 23(14), 7652. doi:10.3390/ijms23147652
IF$_{2021}$ 6,208; MNiSW points 140, Q1

A6. Dorota Chelminiak-Dudkiewicz*, Aleksander Smolarkiewicz-Wyczachowski, Katarzyna Wegrzynowska-Drzymalska, **Marta Ziegler-Borowska***, Effect of Irradiation on Structural Changes of Levan. *Int. J. Mol. Sci*., **2022,** 23(5), 2463 doi: 10.3390/ijms23052463
IF$_{2021}$ 6,208; MNiSW points 140, Q1

A7. Piotr Maćczak*, Halina Kaczmarek*, **Marta Ziegler-Borowska**, Katarzyna Węgrzynowska-Drzymalska, Aleksandra Burkowska-But, The Use of Chitosan and Starch-Based Flocculants for Filter Backwash Water Treatment. *Materials* (Basel), **2022**, 15, 1056 doi: 10.3390/ma15031056
IF$_{2021}$ 3.748; MNiSW points 140, Q2

A8. Patryk Rybczyński, Aleksander Smolarkiewicz-Wyczachowski, Jarosław Piskorz, Szymon Bocian, **Marta Ziegler-Borowska**, Dariusz Kędziera, Anna Kaczmarek-Kędziera *, Photochemical properties and stability of BODIPY dyes. *Int. J. Mol. Sci*., **2021**, 22 (13), 6735 doi: 0.3390/ijms22136735
IF$_{2021}$ 6,208; MNiSW points 140, Q1

A9. Emilia Piosik *, Aleksandra Zaryczniak, Kinga Mylkie, **Marta Ziegler-Borowska*,** Probing of interactions of magnetite nanoparticles coated with native and aminated starch with a DPPC model membrane. *Int. J. Mol. Sci*., **2021**, 22 (11), 5939 doi:10.3390/ijms22115939

IF$_{2021}$ 6,208; MNiSW points 140, Q1

A10. Halina Kaczmarek *, Patryk Rybczyński, Piotr Maćczak, Aleksander Smolarkiewicz-Wyczachowski, **Marta Ziegler-Borowska,** Chitosan as a Protective Matrix for the Squaraine Dye. *Materials* (Basel), **2021,** 14(5), 1171, doi:10.3390/ma14051171
IF$_{2021}$ 3.748; MNiSW points 140, Q2

A11. Emilia Piosik *, **Marta Ziegler-Borowska *,** Dorota Chełminiak-Dudkiewicz, Tomasz Martyński, Effect of aminated chitosan-coated Fe3O4 nanoparticles with applicational potential in nanomedicine on DPPG, DSPC, and POPC Langmuir monolayers as cell membrane models. *Int. J. Mol. Sci.*, **2021,** 22(5), 2467, doi:10.3390/ijms22052467
IF$_{2021}$ 6,208;, MNiSW points 140, Q1

A12. Kinga Mylkie, Paweł Nowak, Patryk Rybczyński, **Marta Ziegler-Borowska** *. Polymer-Coated Magnetite Nanoparticles for Protein Immobilization. *Materials* (Basel), **2021**, 14(2), 248; doi: 10.3390/ma14020248
IF$_{2021}$ 3.748; MNiSW points 140, Q2

A13. Tomasz Siódmiak *, Gudmundur G. Haraldsson, Jacek Dulęba, **Marta Ziegler-Borowska**, Joanna Siódmiak, Michał P. Marszałł, Evaluation of designed immobilized catalytic systems : activity enhancement of lipase B from Candida antarctica. *Catalysts*, **2020**, *10*, doi: 10.3390/catal10080876
IF$_{2020}$ 4.146 , IF$_{2021}$ 4.501; MNiSW points 100, Q2

A. 14. Katarzyna Węgrzynowska-Drzymalska, Patrycja Grębicka, Dariusz T. Młynarczyk, Dorota Chełminiak-Dudkiewicz, Halina Kaczmarek, Tomasz Gośliński, **Marta Ziegler-Borowska *,** Crosslinking of chitosan with dialdehyde chitosan as a new approach for biomedical applications. *Materials* (Basel), **2020**,*13*, doi: 10.3390/ma13153413
IF$_{2020}$ 3.623, IF$_{2021}$ 3.748; MNiSW points 140, Q2

A. 15. Piotr Maćczak, Halina Kaczmarek *, **Marta Ziegler-Borowska**, Recent achievements in polymer bio-based flocculants for water treatment. *Materials* (Basel),**2020,** 13, doi: 10.3390/ma13183951.
IF$_{2020}$ 3.623, IF$_{2021}$ 3.748; MNiSW points 140, Q2

H9. Dorota Chelminiak-Dudkiewicz, Patryk Rybczynski, Aleksander Smolarkiewicz-Wyczachowski, Dariusz T. Mlynarczyk, Katarzyna Wegrzynowska-Drzymalska, Anna Ilnicka, Tomasz Goslinski, Michał P Marszałł, **Marta Ziegler-Borowska*** , Photosensitizing potential of tailored magnetite hybrid nanoparticles functionalized

with levan and zinc (II) phthalocyanine. *Appl. Surf. Sci.*, **2020**, *524*,146602 ; doi:10.1016/j.apsusc.2020.146602
IF$_{2020}$ 6,707; IF$_{2021}$ 7,392; MNiSW points 140, Q1

A16. Emilia Piosik*, Paweł Klimczak, **Marta Ziegler-Borowska,** Dorota Chełminiak-Dudkiewicz, Tomasz Martyński, A detailed investigation on interactions between magnetite nanoparticles functionalized with aminated chitosan and a cell model membrane. *Mat. Sci. Eng*.: *C*, **2020**, *109*, 110616; doi: 10.1016/j.msec.2019.110616
IF$_{2020}$ 7.328, IF$_{2021}$ 8.457; MNiSW points 140, Q1

H8. Marta Ziegler-Borowska*, Kinga Mylkie, Pawel Nowak, Patryk Rybczynski, Adam Sikora, Dorota Chelminiak-Dudkiewicz, Anna Kaczmarek-Kedziera, Testing for Ketoprofen Binding to HSA Coated Magnetic Nanoparticles under Normal Conditions and after Oxidative Stress. *Molecules*, **2020**, *25*, 1945; doi: 10.3390/molecules25081945
IF$_{2020}$ 4.412, IF$_{2021}$ 4.927; MNiSW points 140, Q2

H7. Marta Ziegler-Borowska*, Kinga Mylkie, Mariana Kozlowska, Pawel Nowak, Dorota Chelminiak-Dudkiewicz, Anna Kozakiewicz, Anna Ilnicka, Anna Kaczmarek-Kedziera, Effect of Geometrical Structure, Drying, and Synthetic Method on Aminated Chitosan-Coated Magnetic Nanoparticles Utility for HSA Effective Immobilization. *Molecules*, **2019**, *24*, 1925; doi: 10.3390/molecules24101925
IF$_{2019}$ 3,267 ; IF$_{2021}$ 4,927; MNiSW points 140, Q2

H6. Marta Ziegler-Borowska*, Magnetic nanoparticles coated with aminated starch for HSA immobilization-simple and fast polymer surface functionalization. *Int. J. Biol. Macromol.,* **2019**, *136*,106-114 ; doi: 10.1016/j.ijbiomac.2019.06.044
IF$_{2019}$ 5.162 ; IF$_{2021}$ 8.025; MNiSW points 100, Q1

A17. Marta Ziegler-Borowska*, Katarzyna Wegrzynowska-Drzymalska, Dorota Chelminiak-Dudkiewicz, Jolanta Kowalonek, Halina Kaczmarek. Photochemical Reactions in Dialdehyde Starch,. *Molecules*, **2018**, *23*, 3358; doi: 10.3390/molecules23123358
IF$_{2018}$ 3,060 ; IF$_{2021}$ 4,927; MNiSW points 140, Q2

A18. Dorota Chełminiak-Dudkiewicz**, Marta Ziegler-Borowska,** Magdalena Stolarska, Lukasz Sobotta, Michal Falkowski, Jadwiga Mielcarek, Tomasz Goslinski, Jolanta Kowalonek, Katarzyna Węgrzynowska-Drzymalska, Halina Kaczmarek*. The chitosan-Porphyrazine hybrid materials and their photochemical properties. *J. Photochem. Photobiol. B: Biology*, **2018**, *181*, 1-13; doi: 10.1016/j.jphotobiol.2018.02.021
IF$_{2018}$ 4,067 ; IF$_{2021}$ 6,814; MNiSW points 100, Q1

A19. Adam Sikora, Dorota Chełminiak-Dudkiewicz, **Marta Ziegler-Borowska**, Michał Piotr Marszałł*. Enantioseparation of (RS)-atenolol with the use of lipases immobilized onto new-synthesized magnetic nanoparticles. *Tetrahedron Assym*., **2017**, *28*, 374-380; doi: 10.1016/j.tetasy.2017.01.012
IF$_{2017}$ 2.126 ; IF$_{2021}$ 2.126, Q2

H5. Marta Ziegler-Borowska*, Dorota Chelminiak-Dudkiewicz , Tomasz Siódmiak , Adam Sikora , Katarzyna Wegrzynowska-Drzymalska , Joanna Skopinska-Wisniewska, Halina Kaczmarek, Michał P. Marszałł, Chitosan-Collagen Coated Magnetic Nanoparticles for Lipase Immobilization-New Type of "Enzyme Friendly" Polymer Shell Crosslinking with Squaric Acid. *Catalysts*, **2017,** *7*, 26; doi: 10.3390/catal7010026
IF$_{2017}$ 3,465 ; IF$_{2021}$ 4,501; MNiSW points 100, Q2

A20. Adam Sikora, Dorota Chełminiak-Dudkiewicz, Tomasz Siódmiak, Agata Tarczykowska, Wiktor Dariusz Sroka, **Marta Ziegler-Borowska**, Michał Piotr Marszałł*. Enantioselective acetylation of (R, S)-atenolol: The use of Candida rugosa lipases immobilized onto magnetic chitosan nanoparticles in enzyme-catalyzed biotransformation. *J. Mol. Cat. B: Enzymatic*, **2017**, *134*, 43-50; doi: 10.1016/j.molcatb.2016.09.017
IF$_{2017}$ 2,269 ; IF$_{2021}$ 2,269; MNiSW points 70, Q2

A21. Michał P. Marszałł*, Wiktor D. Sroka, Adam Sikora, Dorota Chełminiak, **Marta Ziegler-Borowska**, Tomasz Siódmiak, Ruin Moaddel. Ligand fishing using new chitosan-based functionalized Androgen Receptor magnetic particles. *J. Pharm. Biomed. Anal.* , **2016**, *127*, 129-135; doi: 10.1016/j.jpba.2016.04.013
IF$_{2017}$ 3.255 ; IF$_{2021}$ 3.571; MNiSW points 100, Q2

H4. Marta Ziegler-Borowska, Dorota Chełminiak, Halina Kaczmarek*, Anna Kaczmarek-Kędziera, Effect of side substituents on thermal stability of the modified chitosan and its nanocomposites with magnetite. *J. Therm. Anal. Calorim*.,**2016**, 124, 1267-1280; doi: 10.1007/s10973-016-5260-x
IF$_{2016}$ 1,953 ; IF$_{2021}$ 4,755; MNiSW points 70, Q1

A22. Anna Kaczmarek-Kędziera*, **Marta Ziegler-Borowska,** Dorota Chełminiak, Przemysław Kuchnicki, Halina Kaczmarek. Effect of UV-irradiation on spectral properties of squaraine dye in diluted solutions. *J. Photochem. Photobiol. A:Chemistry*,**2016**, 318, 77-89; doi: 10.1016/j.jphotochem.2015.11.011
IF$_{2010}$ 2,625 ; IF$_{2021}$ 5,141; MNiSW points 70, Q2

A23. Dorota Chelminiak, **Marta Ziegler-Borowska,** Halina Kaczmarek*. Synthesis of magnetite nanoparticles coated with poly (acrylic acid) by photopolymerization. *Mat. Lett.* , **2016**, *164*, 464-467; doi: /10.1016/j.matlet.2015.11.023

IF_{2015} 2,572 ; IF_{2021} 3,574; MNiSW points 70, Q2

A24. Joanna Skopinska-Wisniewska*, Joanna Kuderko, Anna Bajek, Małgorzata Maj, Alina Sinkowska, **Marta Ziegler-Borowska**. Collagen/elastin hydrogels cross-linked by squaric acid, . *Mat. Sci. Eng*.: *C,* **2016**, *60*, 100-108; doi: 10.1016/j.msec.2015.11.015
IF_{2016} 4,164 ; IF_{2021} 8,457; MNiSW points 140, Q1

A25. Tomasz Siódmiak, Debby Mangelings, Yvan Vander Heyden, **Marta Ziegler-Borowska**, Michał Piotr Marszałł*. High enantioselective novozyme 435-catalyzed esterification of (R, S)-flurbiprofen monitored with a chiral stationary phase. *Appl. Biochem. Biotechnol*., **2015**, *175*, 2769-2785; doi: 10.1007/s12010-014-1455-4
IF_{2015} 1.606 ; IF_{2021} 3.094; MNiSW points 70, Q3

A26. Dorota Chelminiak, **Marta Ziegler-Borowska,** Halina Kaczmarek*. Polymer coated magnetite nanoparticles for biomedical applications. Part II. Fe_3 O_4 nanoparticles coated by synthetic polymers. *Polymers*, **2015**, *60*, 87-94;
IF_{2015} 0.718 ; IF_{2021} 1.528; MNiSW points 70, Q4

A27. Dorota Chelminiak, **Marta Ziegler-Borowska,** Halina Kaczmarek*. Polymer coated magnetite nanoparticles for biomedical applications. Part I. Preparation of nanoparticles Fe_3 O_4 coated by polysaccharides. *Polymers*, **2015**, *60*, 12-17;
IF_{2015} 0.718 ; IF_{2021} 1.528; MNiSW points 70, Q4

H3. Marta Ziegler-Borowska, Dorota Chełminiak, Halina Kaczmarek*, Thermal stability of magnetic nanoparticles coated by blends of modified chitosan and poly (quaternary ammonium) salt. *J. Therm. Anal. Calorim*., **2015**, *119*, 499-506; doi: 10.1007/s10973-014-4122-7
IF_{2015} 1,781 ; IF_{2021} 4,755; MNiSW points 70, Q1

H2. Marta Ziegler-Borowska*, Dorota Chełminiak, Tomasz Siódmiak, Adam Sikora, Michał Piotr Marszałł, Halina Kaczmarek, Synthesis of new chitosan coated magnetic nanoparticles with surface modified with long-distanced amino groups as a support for bioligands binding. *Mat. Lett*., **2014**, *132*, 63-65; doi: 10.1016/j.matlet.2014.06.020
IF_{2015} 2,489 ; IF_{2021} 3,574; MNiSW points 70, Q2

A28. Marta Ziegler-Borowska*, Marta Chylinska, Dariusz Kedziera, Anna Kaczmarek-Kedziera. Simple and efficient synthesis with theoretical calculations of novel N-halamine monomers. *Desig. Monom. Polym.* , **2014**,*17*, 528-534; doi: 10.1080/15685551.2013.867580
IF_{2014} 2,780 ; IF_{2021} 3,718; MNiSW points 40, Q2

A29. Marta Chylińska, **Marta Ziegler-Borowska,** Halina Kaczmarek*, Aleksandra Burkowska, Maciej Walczak, Przemysław Kosobucki. Synthesis and biocidal activity of novel N-halamine hydantoin-containing polystyrenes. *e-Polymers*, **2014**, *14*, 15-25; doi:10.1515/epoly-2013-0010
IF$_{2014}$ 0.569 ; IF$_{2021}$ 3.074; MNiSW points 40, Q2

H1. Marta Ziegler-Borowska*, Tomasz Siódmiak, Dorota Chełminiak, Aleksandra Cyganiuk, Michał P Marszałł. Magnetic nanoparticles with surfaces modified with chitosan-poly [N-benzyl-2-(methacryloxy)-N, N-dimethylethanaminium bromide] for lipase immobilization, *Appl. Surf. Sci.*, **2014,** *288*, 641-648; doi: 10.1016/j.apsusc.2013.10.088
IF$_{2014}$ 2,711 ; IF$_{2021}$ 7,392; MNiSW points 140, Q1

A30. Tomasz Siódmiak, **Marta Ziegler-Borowska**, Michał Piotr Marszałł*, Lipase-immobilized magnetic chitosan nanoparticles for kinetic resolution of (R,S)-ibuprofen, J. *Mol. Cat. B: Enzymatic*, **2013**, *94*, 7-14; doi: 10.1016/j.molcatb.2013.04.008
IF$_{2013}$ 2.745 ; IF$_{2021}$ 2.269; MNiSW points 70, Q2

A31. Halina Kaczmarek*, Marta Chylińska, **Marta Ziegler-Borowska**. Thermal properties of novel polymers based on poly(hydantoin-methyl-p-styrene) and their substrates. *J. Therm. Anal. Calorim*., **2012**, *110*, 1315-1326; doi: 10.1007/s10973-011-2076-6
IF$_{2012}$ 1,982 ; IF$_{2020}$ 4,626; MNiSW points 70, Q2

A32. Halina Kaczmarek*, **Marta Ziegler-Borowska,** Marta Chylińska, Jolanta Kowalonek, Magdalena Wolnicka. Effect of azobenzene derivatives on the photochemical stability of poly (methyl methacrylate) films. *Polym. Deg. Stab.,* **2012**, *97*, 1305-1313; doi: 10.1016/j.polymdegradstab.2012.05.021
IF$_{2012}$ 2,770 ; IF$_{2021}$ 5,204; MNiSW points 100, Q1

A33. Mariusz J Bosiak, Judyta A Jakubowska, Krzysztof B Aleksandrzak, Szymon Kamiński, Anna Kaczmarek-Kędziera, **Marta Ziegler-Borowska,** Dariusz Kędziera, Jörg Adams. Synthesis of a new class of highly fluorescent aryl-vinyl benzo [1, 2-b: 4, 5-b'] difuran derivatives. *Tetrahedron Lett*., **2012**, *53*, 3923-3926; doi: 10.1016/j.tetlet.2012.05.087
IF$_{2012}$ 2,397 ; IF$_{2021}$ 2,032; MNiSW points 70, Q2

A34. Marta Ziegler-Borowska, Marzena Ucherek, Jolanta Kutkowska, Liliana Mazur, Bożena Modzelewska-Banachiewicz, Dariusz Kędziera, Anna Kaczmarek-Kędziera*, Reaction of N3-phenylbenzamidrazone with cis-1, 2-cyclohexanedicarboxylic anhydride. *Tetrahedron Lett*., **2010**, *51*, 2951-2955; doi: 10.1016/j.tetlet.2010.03.116
IF$_{2010}$ 2.618 ; IF$_{2021}$ 2.032; MNiSW points 70, Q2

B-list journals:

A35. Radosław Szczepański, Laura Gadomska, Marek Michalak, Paweł Bakun, Kacper Pawlak, Tomasz Gośliński*, **Marta Ziegler-Borowska**, Beata Czarczyńska-Goślińska, Chitosan-derivatives in combinations with selected porphyrinoids as novel hybrid materials for medicine and pharmacy, *Progress on Chemistry and Application of Chitin and its Derivatives*, **2020**, *25*, 63-78.
MNiSW credits 70

5. List of project, engineering, and design as well as technological achievements

Total of 3 post-doctoral patents (not listed in section I.3), the total number of MNiSW points 225 (according to the list of 1 December 2021).

5.1 Tomasz Siódmiak, **Marta Ziegler-Borowska**, Michał P. Marszałł, Methyl ester of 2-amino-2-(4-dihydroxyborylbenzyl)-3-methylbutanoic acid and method of its preparation: patent description **PL no**. **227525 B1.** Warsaw, Patent Office of the Republic of Poland: **2017.**
MNiSW credits 75

5.2 Marta Ziegler-Borowska, Marta Chylinska, Halina Kaczmarek, New styrene monomers containing the spirohydantoin system of 2-indanone and 2-tetralone and the method of their production, patent description **PL no 215809**. Warszawa, Patent Office of the Republic of Poland: **2014.**
MNiSW credits 75

5.3 Marta Ziegler-Borowska, Mariusz J. Bosiak, Marek Zaidlewicz, 2-amino-6-dihydroxy-boryl- 1,2,3,4-tetrahydronaphthalene-2-carboxylic acid and the method of its production: patent description **PL no. 215215.** Warsaw, Patent Office of the Republic of Poland: **2013.**
MNiSW credits 75

6. List of public realizations of works of art

not applicable

7. Information on presentations given at national or international scientific or arts conferences, including a list of lectures delivered upon invitation and plenary lectures

7.1 Before PhD degree (9 presentations, 4 international conferences: 3 posters, 1 lecture; 5 national: 3 posters, 2 lectures)

1. **Ziegler-Borowska M.** , Zaidlewicz M., Synthesis of α- methyl-BPA for BNCT therapy. XLVI Congress of PTCh and SITPCh, 15-18. 09. 2003 Lublin. Poster.
2. **Ziegler-Borowska M.** , Zaidlewicz M, Synthesis of α- methyl-BPA. EUROBORON 3. 12-16. 09. 2004 Rez, Czech Republic. Poster.
3. **Ziegler-Borowska M**. , Zaidlewicz M., Synthesis of boronated amino acids for BNCT therapy. XLVIII Congress of PTCh and SITPCh, 18-22. 09. 2005 Poznań. Poster
4. Zaidlewicz M. , Tafelska-Kaczmarek A. , **Ziegler-Borowska M.** , Prewysz-Kwinto A., Synthesis of chiral aminoalcohols and boronated amino acids. XLVIII Congress of PTCh and SITPCh, 18-22. 09. 2005 Poznań. **Lecture**
5. Zaidlewicz M. , Marciniec B. , Cytarska J. , Wolan A. , **Ziegler-Borowska M.,** Synthesis of boronated amino acids and silylated boronates. Imeboron XII, Sendai, Japan, 2005 **Lecture**.
6. **Ziegler-Borowska M.** , Kosmalski T. , Bosiak M. J. , Kaczanowska K. , Zaidlewicz M., Synthesis of New Analogues of BPA", EUROBORON 4, 2-6 09. 2007 Bremen, Germany, 64P, 144. Poster
7. **Ziegler-Borowska M.** , Kosmalski T. , Bosiak M.J. , Kaczanowska K. , Zaidlewicz M., Synthesis of new BPA analogues. 50th Anniversary Polish Chemical Society & Polish Association of Chemical Engineers Congress & 11th EuCheMS - DCE, 2007. Poster
8. **Ziegler-Borowska M.** , Synthesis of 4-dihydroxyborylphenylalanine analogues. Conference promoting and summarising the "INNOREG" project, 9 February 2007, Toruń. **Lecture**
9. **Ziegler-Borowska M.** , Wolan A. , Kosmalski T. , Zaidlewicz M., Synthesis of boronated amino acids, new analogues of BPA. Imeboron XIII, 21-25 IX 2008, Platja d'Aro, Spain. Poster.

7.2 After award PhD degree
(International: 28 posters, 14 communications, 1 lecture; national: 55 posters, 32 communications, 1 lecture)

1. Chełminiak-Dudkiewicz D. , Smolarkiewicz-Wyczachowski A. , Mylkie K. , **Ziegler-Borowska M**., Chitosan-based materials with natural active substance for wound healing, In: Interdisciplinary Conference on Drug Sciences, ACCORD 2022 "Synergy of interdisciplinary innovations ", Warsaw Medical University, Warsaw. Poster
2. Chełminiak-Dudkiewicz D. , Smolarkiewicz-Wyczachowski A., Węgrzynowska-Drzymalska K., **Ziegler-Borowska M**., Properties and structural changes of bacterial polymer levan as a functional coating material for biomedical applications, Silesian Meetings on Polymer Materials *Polymat 2022*, Centre for Polymer and Carbon Materials of the Polish Academy of Sciences, Zabrze. Poster
3. Mylkie K., Nowak P. , **Ziegler-Borowska M**. , Immobilization of alpha-1-acid glycoprotein on magnetic nanoparticles functionalized with starch and boronic acids, Interdisciplinary Conference on Drug Sciences, ACCORD 2022 "Synergy of interdisciplinary innovations".Warsaw Medical University, Warsaw. Poster
4. Nowak P. , Mylkie K. , **Ziegler-Borowska M.** , Synthesis of hydrazide starch for the selective release of anti-cancer drugs, Interdisciplinary Conference on Drug Sciences, ACCORD 2022 "Synergy of interdisciplinary innovations", Warsaw Medical University, Warsaw, Poland. Poster
5. Nowak P. , Mylkie K. , **Ziegler-Borowska M**., Determination of the degree of binding of ketoprofen to HSA immobilised on magnetic nanoparticles under conditions of artificially induced oxidative stress, Winter Meeting of the Young Section of the Polish Chemical Society 2022, Adam Mickiewicz University in Poznań. Poster
6. Smolarkiewicz-Wyczachowski A. , Rybczyński P. , **Ziegler-Borowska M. ,** Kaczmarek-Kędziera A., Study of the photosensitising potential of new bodipy type compounds, Winter Meeting of the Young Section of the Polish Chemical Society 2022, Adam Mickiewicz University in Poznań. Poster
7. Smolarkiewicz-Wyczachowski A. , Bocian Sz. , **Ziegler-Borowska M.** , Chełminiak-Dudkiewicz D. , New chitosan composites with BODIPY compounds as potential photosensitizing drug form for PDT, Interdisciplinary Conference on Drug Sciences, ACCORD 2022 "Synergy of interdisciplinary innovations", Warsaw Medical University, Warsaw, Poland. Poster

8. Węgrzynowska-Drzymalska K. , Chełminiak-Dudkiewicz D. , Kaczmarek H. , **Ziegler-Borowska M**. , Dialdehyde nanocrystalline starch as a crosslinking agent for biomedical applications, IX Łódź Symposium for Chemistry Doctoral Students, Łódź, 19-20 May 2022. Communiqué
9. Mylkie K., Nowak P. , **Ziegler-Borowska M.** , Immobilization of acidic α1-glycoprotein on magnetic nanoparticles. XIV Copernican Doctoral Seminar, 20-22 September 2021, Toruń. Poster
10. Nowak P. , Mylkie K. , **Ziegler-Borowska M.** , Immobilization of blood serum proteins on magnetic nanoparticles coated with modified starch. XVII Wrocław Student Chemistry Symposium, 15-16.05.2021, Wrocław. Communication
11. Smolarkiewicz-Wyczachowski A. , **Ziegler-Borowska M.** , New chitosan composites with BODIPY dyes for potential biomedical applications. XVII Wrocław Student Chemistry Symposium, 15-16.05.2021, Wrocław. Communication
12. Maćczak P. , Kaczmarek H. , **Ziegler-Borowska M.** Application of flocculants based on chitosan and modified starch in the treatment of wash water. 1st Pomeranian Student Chemistry Symposium, 26.-27.09.2020, Gdańsk. Communication
13. Węgrzynowska-Drzymalska K. , Kaczmarek H. , **Ziegler-Borowska M.** , Crosslinking of chitosan membranes using nanocrystalline dialdehyde cellulose. Copernican Doctoral e-Seminar organised by the Department of Chemistry, Nicolaus Copernicus University in Toruń, 2020-09-07. Communiqué.
14. Mylkie K. , Nowak P. , **Ziegler-Borowska M.** , Study of the interaction of ketoprofen with HSA under normal and artificially induced oxidative stress conditions. Copernican Doctoral e-Seminar organised by the Department of Chemistry, Nicolaus Copernicus University in Toruń, 2020-09-07. Poster.
15. Chełminiak-Dudkiewicz D. , Gauza J. , Węgrzynowska-Drzymalska K. , **Ziegler-Borowska M.** , Photosensitizers conjugated with polymer-functionalized magnetic nanoparticles as potential drugs for photodynamic therapy (PDT). 3rd International Conference on Applied Surface Science, ICASS, 17-20 06. 2019, Pisa, Italy. Poster
16. Nowak P. , Mylkie K. , **Ziegler-Borowska M.** , Synthesis of magnetic nanoparticles coated with modified starch and human blood serum albumin. 50 faces of chemistry, L National School of Chemistry, 30.04 - 04.05.2019, Smardzewice. Poster
17. Gauza J. , Chełminiak-Dudkiewicz D. , **Ziegler-Borowska M.** , Synthesis and characterisation of photosensitiser-coated magnetic nanoparticles for photodynamic therapy. 50 faces of chemistry, L National School of Chemistry, 30.04 - 04.05.2019, Smardzewice. Poster

18. Smolarkiewicz-Wyczachowski A. , Rybczyński P. , Piskorz J. , Falkowski M. , Kaczmarek-Kędziera A. , **Ziegler-Borowska M.**. Study of the solvent effect on the photostability of new BODIPY-type systems. L All-Polish School of Chemistry, 30.04 - 04.05.2019, Smardzewice. Poster
19. Węgrzynowska-Drzymalska K. , Chełminiak-Dudkiewicz D. , Kaczmarek H. , **Ziegler-Borowska M.** , Synthesis and characterisation of nanocrystalline dialdehyde starch for biomedical applications. BioOrg 2019, 3rd National Symposium on Bioorganic, Organic Chemistry and Biomaterials, 07.12.2019 Poznań,. Communication
20. Rybczyński P. , Smolarkiewicz-Wyczachowski A. , Piskorz J. , Kamedulski P. , Chełminiak-Dudkiewicz D. , Kaczmarek-Kędziera A. , **Ziegler-Borowska M**. Study of the solvent effect on the photostability of new bodipy type compounds. BioOrg 2019, 3rd National Symposium on Bioorganic, Organic and Biomaterials Chemistry, 07.12.2019, Poznań. Communication
21. Mylkie K. , Nowak P. , **Ziegler-Borowska M.** , Effect of oxidative stress on the binding of ketoprofen by human serum albumin immobilized on magnetic nanoparticles coated with modified starch. BioOrg 2019, 3rd National Symposium on Bioorganic, Organic and Biomaterials Chemistry, 07.12.2019, Poznań. Communication
22. Węgrzynowska-Drzymalska K. , Grębicka P. , Chełminiak-Dudkiewicz D. , **Ziegler-Borowska M.** , Kaczmarek H. , Synthesis of nanocrystalline cellulose for biomedical applications. 3rd Doctoral Symposium on Nanotechnology, NanoMat, 13-14 06. 2019, Łódź. Communication
23. Węgrzynowska-Drzymalska K. , Grębicka P. , Chełminiak-Dudkiewicz D. , **Ziegler-Borowska M. ,** Kaczmarek H. , Preparation of nanocrystalline cellulose for biomedical applications. 4th Interdisciplinary Conference Nano(&)BioMaterials, NaBioMa 2019, from theory to application, 6-7 06. 2019, Toruń. Poster
24. Węgrzynowska-Drzymalska K. , Chełminiak-Dudkiewicz D. , Kaczmarek H. , **Ziegler-Borowska M.** , Synthesis of dialdehyde chitosan for biomedical applications. New aspects on chemistry and application of chitin and its derivatives, XXV Conference, Polish Chitosan Society, 25-27 09. 2019, Toruń. Communication
25. Chełminiak-Dudkiewicz D. , Gauza J. , Rybczyński P. , Smolarkiewicz-Wyczachowski A. , Węgrzynowska-Drzymalska K. , Gośliński T. , **Ziegler-Borowska M**. Chitosan composites with photosensitizers as a potential new form of the drug for photodynamic therapy. New aspects on chemistry and application of chitin and its derivatives, XXV Conference, Polish Chitosan Society, 25-27 09.2019, Toruń. Communication
26. Rybczyński P. , Smolarkiewicz-Wyczachowski A. , Baumgart M. , Chełminiak-Dudkiewicz D. , Piskorz J. , Kaczmarek-Kędziera A. , **Ziegler-Borowska M**. Study of photostability of new BODIPY-type systems. XIII Copernican Doctoral Seminar, 16-18 06. 2019, Bachotek. Communication

27. Mylkie K. , Nowak P. , **Ziegler-Borowska M.** , Study of the interaction of non-steroidal anti-inflammatory drugs with human serum albumin immobilized on magnetic nanoparticles. XIII Copernican Doctoral Seminar, 16-18 06. 2019, Bachotek. Communication
28. Grębicka P. , Olewnik-Kruszkowska E. , Adamczyk A. , **Ziegler-Borowska M.** Polymer sandwich composites with magnetite nanoparticles and titanium dioxide as potential magneto and electroactive materials. XIII Copernican Doctoral Seminar, 16-18 06. 2019, Bachotek. Poster
29. Węgrzynowska-Drzymalska K. , Chełminiak-Dudkiewicz D. , **Ziegler-Borowska M.** , Kaczmarek H. Preparation of nanocrystalline dialdehyde starch for biomedical applications. XIII Copernican Doctoral Seminar, 16-18 06. 2019, Bachotek. Poster
30. Maćczak P. , Kaczmarek H. , **Ziegler-Borowska M.**. Bioflocculants used in water purification processes. XIII Copernican Doctoral Seminar, 16-18 06. 2019, Bachotek. Poster
31. **Ziegler-Borowska M.** , Mylkie K. , Nowak P. , Kozakiewicz A. , Magnetic nanoparticles coated with polysaccharides for HSA and alphaAGP immobilization. 6th Nano Today Conference -Elsevier, 16-20 06. 2019, Lisbon, Portugal. Poster
32. Węgrzynowska-Drzymalska K. , Chełminiak-Dudkiewicz D. , **Ziegler-Borowska M.** , Kaczmarek H. Synthesis of nanocrystalline dialdehyde cellulose for biomedical applications. Winter Meeting of the Student Section of the Polish Chemical Society, University of Gdańsk, 14.12. 2019, Gdańsk. Communication
33. Nowak P. , Mylkie K. , **Ziegler-Borowska M**. Interaction of HSA immobilized on magnetic nanoparticles with ketoprofen under artificially induced oxidative stress. Winter Meeting of the Student Section of the Polish Chemical Society, University of Gdańsk, 14. 12. 2019. Poster
34. Węgrzynowska-Drzymalska K. , Chełminiak-Dudkiewicz D. , **Ziegler-Borowska M.** , Kaczmarek H. Nanocrystalline dialdehyde starch as a crosslinking agent for biomedical applications, Research and development of young scientists in Poland 2018, Poznań. Communication
35. Rybczynski P. , Mylkie K. , Chełminiak-Dudkiewicz D. , Gośliński T. , Kaczmarek H. , **Ziegler-Borowska M**. Porphyrin photosensitizers in biopolymer films as potential media for phytodynamic therapy. Bridging experiment and theory in precision spectroscopy, 4th MOLIM Training School, 26-30 06. 2018, Torun, Poland. Poster
36. Węgrzynowska-Drzymalska K. , Chełminiak-Dudkiewicz D. , **Ziegler-Borowska M. ,** Kaczmarek H. , Synthesis of nanocrystalline dialdehyde starch for biomedical applications. 2nd Doctoral Symposium on Nanotechnology NanoMat, 21-22 06. 2018, Łódź. Communication

37. Rybczynski P. , Mylkie K. , Chełminiak-Dudkiewicz D. , **Ziegler-Borowska M**. Chitosan and phthalocyanine composites as potential PDT materials, IX Medical Chemistry Seminar, 13-15.09.2018, Lublin. Communication
38. Mylkie K. , Rybczyński P. , Nowak P. , Smolarkiewicz-Wyczachowski A. , Chełminiak-Dudkiewicz D. , **Ziegler-Borowska M**. Immobilization of human serum albumin on magnetite nanoparticles coated with modified chitosan. IX Medical Chemistry Seminar, 13-15.09.2018, Lublin. Poster
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41. Węgrzynowska-Drzymalska K. , Chełminiak-Dudkiewicz D. , **Ziegler-Borowska M.** , Grębicka P. , Kaczmarek H.. Nanocrystalline crosslinking agents based on polysaccharides derived from vegetable waste and waste paper. NanoBioMaterials - theory and practice, 6-8 06. 2018, Toruń. Poster
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48. Węgrzynowska-Drzymalska K. , Chełminiak-Dudkiewicz D. , **Ziegler-Borowska M.** , Kaczmarek H. , Synthesis of new nanocrystalline cross-linking agents based on polysaccharides obtained from plant waste and paper waste. XII Copernican International Young Scientists Conference, 28-29 06. 2018, Toruń. Communication
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51. Mylkie K. , Chełminiak-Dudkiewicz D. , Rybczyński P. , Nowak P. , **Ziegler-Borowska M**. , Magnetic chitosan-coated nanoparticles for immobilisation of human blood serum albumin. Winter Meeting of the Student Section of the Polish Chemical Society, Warsaw University of Technology, 8 12. 2018, Warsaw, Poland. Poster
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53. **Ziegler-Borowska M**., Rybczynski P., Chelminiak-Dudkiewicz D., Sikora A. Kaczmarek-Kedziera A, Magnetic mesoporous carbon materials and nanoparticles as potential sorbents for NSAIDs, Applied Nanotechnology & Nanoscience International Conference, 22-24 10. 2018, Berlin, Germany. Poster
54. **Ziegler-Borowska M.** , Chelminiak-Dudkiewicz D. , Mylkie K. , Sikora A. , Polysaccharides coated magnetic nanoparticles synthesis for bioligands binding, 19th Tetrahedron Symposium, 26-29 June 2018, Riva del Garda, Italy. Poster
55. Smolarkiewicz-Wyczachowski A. , Rybczyński P. , Mylkie K. , Nowak P. , Gauza J. , Chełminiak-Dudkiewicz D. , **Ziegler-Borowska M**. , Preparation and photoactivity study of chitosan composites with zinc protoporphyrin IX as potential materials for PDT. Winter Meeting of the Student Section of the Polish Chemical Society, Warsaw University of Technology, 8 12. 2018, Warsaw, Poland. Poster

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62. Węgrzynowska-Drzymalska K. , Chełminiak-Dudkiewicz D. , **Ziegler-Borowska M.** , Kaczmarek H., Synthesis and characterisation of dialdehyde starch for biomedical applications. BioOrg 2017, 2nd National Symposium on Bioorganic, Organic and Biomaterials Chemistry, Poznan University of Technology, Department of Chemical Technology, 02.12.2017, Poznan. Poster
63. Chełminiak-Dudkiewicz D. , Rybczyński P. , Falkowski M. , Stolarska M. , Sobotta Ł. , Mielcarek J. , Węgrzynowska-Drzymalska K. , Gośliński T. , Kaczmarek H. , **Ziegler-Borowska M**. , Porphyrin photosensitizers in complexes with chitosan as potential compounds for photodynamic therapy. Poznan University of Technology, Faculty of Chemical Technology, 02.12.2017, Poznan. Communication

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65. Grębicka P. , Chełminiak-Dudkiewicz D. , Węgrzynowska-Drzymalska K. , Kaczmarek H. , **Ziegler-Borowska M**. , Synthesis of magnetic composite microspheres coated with chitosan and titanium oxide. 1st Conference "Chemistry for beauty and health = Chemistry for beauty and health", 8-10 06. 2017, Toruń. Poster
66. Marecki Ł. , **Ziegler-Borowska M**. , Optimisation of birch bark extraction and synthesis of chitosan films with betulin. I Conference "Chemistry for beauty and health and health = Chemistry for beauty and health", 8-10 06. 2017, Toruń. Poster
67. Zielińska A. , Rybczyński P. , Chełminiak-Dudkiewicz D. , Sikora A. , Ilnicka A. , Kaczmarek-Kędziera A. , Łukaszewicz J.P. , Wujec M. , **Ziegler-Borowska M**. Adsorption of ketoprofen on magnetic nanomaterials. NanoBioMaterials - theory and practice, 29-31 05. 2017, Toruń. Poster
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70. Tarczykowska A. , Sikora A. , Chełminiak-Dudkiewicz D. , **Ziegler-Borowska M. ,** Marszałł M. P. , Comparison of lipase activity in native and immobilized form on magnetic nanoparticles in kinetic separation of β-blocker drugs. NanoBioMaterials - theory and practice, 29-31 05. 2017, Toruń. Poster
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72. **Ziegler-Borowska M.** , Chełminiak-Dudkiewicz D. , Węgrzynowska-Drzymalska K. , Mylkie K. , Sikora A. , Kaczmarek H. , Synthesis of magnetic nanoparticles coated with biopolymers and human blood serum albumin. NanoBioMaterials - theory and practice, 29-31 05. 2017, Toruń. Communication
73. Sikora A. , Chełminiak-Dudkiewicz D. , **Ziegler-Borowska M.** , Marszałł M. P. Application of magnetic nanoparticles in kinetic separation of (R,S)-atenolol. NanoBioMaterials - theory and practice, 29-31 05. 2017, Toruń. Poster

74. Chełminiak-Dudkiewicz D. , Sikora A. , Węgrzynowska-Drzymalska K. , Marszałł M. P., Kaczmarek H. , **Ziegler-Borowska M**. , Chitosan-coated magnetic nanoparticles for immobilisation of bioligands: synthesis and characterisation. NanoBioMaterials - theory and practice, 29-31 05. 2017, Toruń. Communication
75. Węgrzynowska-Drzymalska K. , Chełminiak-Dudkiewicz D. , **Ziegler-Borowska M.** , Kaczmarek H.. Dialdehyde starch as a crosslinking agent for biomedical applications. 5th Lodz Symposium for Chemistry Doctoral Students, 11-12 05. 2017, Lodz. Communication
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79. Węgrzynowska-Drzymalska K. , Chełminiak-Dudkiewicz D. , Mańkowska M. , Falkowski M. , Stolarska M. , Sobotta Ł. , Mielcarek J. , Gośliński T. , Kaczmarek H. , **Ziegler-Borowska M**. , Photosensitizers based on porphyrin derivatives as a potential photodynamic agent. XI Copernican International Young Scientists Conference, 28-30 06. 2017, Toruń. Poster
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84. **Ziegler-Borowska M.** , Chełminiak D. , Siódmiak T. , Sikora A. , Marszałł M. P. , Kaczmarek H. , Magnetic nanoparticles for the immobilisation of biologands. NanoBioMaterials - theory and practice, 2-3 06. 2016, Toruń. Communication
85. Siódmiak T. , **Ziegler-Borowska M.** , Sikora A. , Chełminiak D. , Marszałł M. P., Kinetic separation of selected non-steroidal anti-inflammatory drugs (NSAIDs) using lipases immobilised on magnetic particles. NanoBioMaterials - theory and practice, 2-3 06. 2016, Toruń. Poster
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90. Chełminiak D. , **Ziegler-Borowska M.** , Siódmiak T. , Sikora A. , Kaczmarek H. , Kaczmarek-Kędziera A. , Marszałł M. P., Synthesis and characterizatio of the magnetite nanoparticles coated with modified chitosan rich of long-distanced amino groups for lipase immobilization. POLYMAT 2016, Silesian Meetings on Polymer Materials, 27-28.06.2016 Zabrze. Poster
91. Chełminiak D. , **Ziegler-Borowska M.** , Ilnicka A. , Kaczmarek H. , Łukaszewicz J. P., Węgrzynowska-Drzymalska K. , Kaczmarek-Kędziera A. , Mesoporous carbon materials obtained from polymer coated magnetic nanoparticles as a potential sorbents for NSAIDs. POLYMAT 2016, Silesian Meetings on Polymer Materials, 27-28.06.2016 Zabrze. Poster

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93. Węgrzynowska-Drzymalska K. , Chełminiak-Dudkiewicz D. , **Ziegler-Borowska M.** , Sikora A. , Kaczmarek H. , Synthesis of magnetic nanoparticles with surface modified with chitosan and poly(acrylic acid) blends for biomedical application. VIII Medicinal Chemistry Seminar, 15-17 09. 2016, Lublin. Communication
94. Wesołowski P. , Chełminiak-Dudkiewicz D. , Węgrzynowska-Drzymalska K. , **Ziegler-Borowska M**. , Synthesis of modified chitosanes with surfaces reach of NH2 groups. VIII Medical Chemistry Seminar, 15-17 09. 2016, Lublin. Poster
95. Sikora A. , Chełminiak-Dudkiewicz D. , Tarczykowska A. , **Ziegler-Borowska M.** , Marszałł M. P.. The use of Candida rugosa lipase immobilized onto magnetic nanoparticles in enantioselective acetylation of (R,S)-atenolol. VIII Medicinal Chemistry Seminar, 15-17 09. 2016, Lublin. Communication
96. Chełminiak-Dudkiewicz D. , **Ziegler-Borowska M.** , Sikora A. , Siódmiak T. , Kaczmarek-Kędziera A. , Ilnicka A. , Kaczmarek H., Magnetite nanoperticles coated with aminated chitosan for lipase immobilization. VIII Medicinal Chemistry Conversation, 15-17 09. 2016, Lublin. Communication
97. **Ziegler-Borowska M.** , Chełminiak-Dudkiewicz D. , Sikora A. , Wesołowski P. Biopolymers coated magnetic nanoparticles for HSA immobilization. VIII Medical Chemistry Seminar, 15-17 09. 2016, Lublin. Poster
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99. Zielińska A., Rybczyński P. , Chełminiak-Dudkiewicz D. , Sikora A. , Ilnicka A. , **Ziegler-Borowska M.** , Kaczmarek-Kędziera A. , Magnetic nanoparticles for ketoprofen adsorption. VIII Medical Chemistry Seminar, 15-17 09. 2016, Lublin. Poster
100. Kuchnicki P. , Kiełkowska U. , Chełminiak D. , **Ziegler-Borowska M.** , Kaczmarek-Kędziera A., Synthesis and study of photodegradation properties of 2,4-bis-[4-(dimethylamino)phenyl]saccharine in organic solvents. 10th Copernican Doctoral Seminar, 21-24 06. 2016, Bachotek. Poster
101. Kaczmarek-Kedziera A., **Ziegler-Borowska M.** , Chelminiak D., Kuchnicki P., Lukaszewicz J.P., Modification of carbon nanomaterials with squaraine dyes. 4th International Conference on Multifunctional, Hybrid and Nanomaterials, 9-13 03. 2015, Sitges (near Barcelona), Spain. Poster

102. **Ziegler-Borowska M**, D. Chelminiak, T. Siódmiak, A. Kaczmarek-Kedziera, Synthesis of magnetic nanoparticles coated with pure and modified chitosan
for bioligands binding. 4th International Conference on Multifunctional, Hybrid and Nanomaterials, 9-13 March 2015, Sitges (near Barcelona), Spain. Poster
103. **Ziegler-Borowska M**. , Chełminiak D. , Siódmiak T. , Ilnicka A. , Kaczmarek H. , Łukaszewicz J. P. , Kaczmarek-Kędziera A., Synthesis of biopolymers coated with magnetic nanoparticles and mesoporous carbon materials as a potential sorbents for NSAIDs, VII Medical Chemistry Seminar & VIII PTBI Symposium, 17-19 09. 2015, Lublin. Poster
104. Siódmiak T. , **Ziegler-Borowska M**. , Chełminiak D. , Sikora A. , Marszałł M. P., Kinetic resolution of (R,S)-ibuprofen with the application of lipase from Candidia rugosa in free and immobilized form. VII Medicinal Chemistry Seminar & VIII PTBI Symposium, 17-19 09. 2015, Lublin. Communication
105. Chełminiak D. , **Ziegler-Borowska M**. , Ilnicka A. , Siódmiak T. , Kaczmarek H. , Kaczmarek-Kędziera A., Magnetic nanoparticles coated with modified chitosan rich of long-distanced amino groups : synthesis, characterization, and lipase immobilization, VII Medicinal Chemistry Conversation & VIII PTBI Symposium, 17-19 09. 2015, Lublin. Communication
106. Chełminiak D. , **Ziegler-Borowska M**. , Siódmiak T. , Kaczmarek H. , Ilnicka A. , Kaczmarek-Kędziera A., Synthesis and characterisation of magnetite nanoparticles coated with modified chitosan as carriers for immobilisation of bioligands, Polish Chemistry in the City of Freedom: 58th Scientific Congress of the Polish Chemical Society in Gdańsk, 21-25.09.2015, Gdańsk. Communication
107. Chełminiak D. , **Ziegler-Borowska M**. , Siódmiak T., Kaczmarek H. , Kaczmarek-Kędziera A., Synthesis of polymer-coated magnetite nanoparticles for biomedical applications, III Łódź Symposium for Chemistry Doctoral Students, 27-28 04. 2015, Łódź. Communication
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109. Chełminiak D. , **Ziegler-Borowska M. ,** Siódmiak T. , Kaczmarek H. , Grodzicki E. , Ilnicka A. , Łukaszewicz J. P. , Kuchnicki P. , Kaczmarek-Kędziera A., Synthesis and properties of magnetic nanoparticles with polymer

for bioligands immobilization, Central European Conference on Regenerative Medicine CECRM 2015, 14-15 03. 2015, Bydgoszcz. Communication

110. Kuchnicki P. , Chełminiak D. , Kiełkowska U. , **Ziegler-Borowska M**. , Kaczmarek-Kędziera A., Synthesis and photodegradation of bis[4-(dimethylamino)phenyl]squaraine in organic solvents, Central European Conference on regenerative Medicine CECRM 2015, 14-15.03.2015, Bydgoszcz. Poster
111. Chełminiak D. , **Ziegler-Borowska M**. , Siódmiak T. , Kaczmarek H. , Kaczmarek-Kędziera A., Synthesis and characterisation of magnetite nanoparticles coated with biopolymers for immobilisation of bioligands, 1st Wielkopolska Symposium on Bioorganic, Organic and Biomaterials Chemistry, 05.12.2015, Poznań. Communication
112. Kuchnicki P. , Kiełkowska U. , **Ziegler-Borowska M**. , Chełminiak D. , Kaczmarek-Kędziera A., Synthesis and photodegradation properties of saccharine dyes in organic solvents, 1st Wielkopolska Symposium on Bioorganic, Organic and Biomaterials Chemistry, 05.12.2015. Poznań. Poster
113. Chełminiak D., **Ziegler-Borowska M.** , Siódmiak T., Marszałł M.P., Synthesis of magnetic nanoparticles with surface modified with CS-PQ for lipase immobilization. Chemistry Conference for Young Scientists ChemCYS 2014, 27-28 02. 2014. Duinse Polders, Blankenberge, Belgium. Poster
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118. Chełminiak D., **Ziegler-Borowska M.,** Siódmiak T., Marszałł M.P., Kaczmarek H., Synthesis of magnetite nanoparticles coated by blends of chitosan and poly (quaternary ammonium) salt for biomedical applications. VI Medical Chemistry Seminar, 18-20. 09. 2014, Lublin. Poster
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121. Chełminiak D., Maćczak P., **Ziegler-Borowska M.** , Siódmiak T., Marszałł M. P, Synthesis of magnetite nanoparticles coated with a mixture of chitosan and poly[N,N-dimethyl-N-benzyl-N-(ethyl methacrylate) ammonium] for biomedical applications. Second National Conference of Doctoral Students and
D. students and Young Scientists "Per scientiam ad salutem aegroti", 26-27. 04. 2013. Bydgoszcz. Communication
122. Maćczak P. Chełminiak D., **Ziegler-Borowska M.** , Chitosan modified with squaraine dyes for biomedical applications, 1st Pomeranian Symposium on Tissue Engineering and Regenerative Medicine, 02.03.2013, Bydgoszcz. Poster
123. Chełminiak D., Siódmiak T., Maćczak P.**, Ziegler-Borowska M.,** Marszałł M. P., Synthesis of magnetite nanoparticles coated with a mixture of chitosan and poly[N,N-dimethyl-N-benzyl-N-(ethyl matricrylate) ammonium] for biomedical applications. 1st Pomeranian Symposium on Tissue Engineering and Regenerative Medicine, 02.03.2013. Bydgoszcz. Communication
124. Chełminiak D., Maćczak P., **Ziegler-Borowska M.,** Siódmiak T., Marszałł M. P, Synthesis of chitosan-poly[N-benzyl-2-(methacryloxy)-N,N-dimethylethanaminium bromide] coated magnetic nanoparticles for biomedical applications. Breaking frontiers : submicron structures in physics and biology : XLVIII Zakopane School of Physics, 20th-25th May, 2013, Zakopane, Poland. Communication
125. Maćczak P. , Chełminiak D. , **Ziegler-Borowska M**., Synthesis and properties of materials based on chitosan with addition of bis[4-dimethylamino)phenyl]squaraine. Breaking frontiers : submicron structures in physics and biology : XLVIII Zakopane School of Physics, 20th-25th May, 2013, Zakopane, Poland. Poster

126. Gliszczyńska J., Bosiak M., Kaczmarek-Kedziera A., Kędziera D., **Ziegler-Borowska M.**, Calculations of NMR spectra for hydantoin derivatives, Central European School on Physical Organic Chemistry, 07-11 05. 2012, Poland. Poster
127. Czeronko W., Chylińska M., Kaczmarek-Kedziera A., **Ziegler-Borowska M.,** Kędziera D., Calculations of NMR spectra for hydantoin derivatives. Central European School on Physical Organic Chemistry, 07-11 05. 2012, Poland. Poster
128. Bieganowska A., Kaczmarek-Kędziera A., Kędziera D., **Ziegler-Borowska M.** , Synthesis and theoretical calculation of 5-(1-phenylpropan-2-yl)imidazolidine-2,4-dione. Central European School on Physical Organic Chemistry, 07-11 05. 2012, Poland. Poster
129. Chylińska M., **Ziegler-Borowska M.** , Kaczmarek H., New polymers containing N-halogenated spirohydantoin systems with expected biological activity. V Copernican Doctoral Seminar, Toruń, 16-18.06.2011.Communiqué
130. Chylińska M., **Ziegler-Borowska M**., Kaczmarek H.,Novel spirohydantoine-based styrene monomers. 5th European Young Investigator Conference, 22-26. 06. 2011, Frankfurt/Oder (GER) / Słubice (PL). Poster
131. **Ziegler-Borowska. M.** , Little black without secrets - active substances contained in coffee. II Copernican Symposium for Students of Natural Sciences, 25. 05. 2011r. **Plenary lecture**

8. Information on participation in organizational and scientific committees at national or international conferences, including the applicant's function

- Member of the scientific committee of the Copernican Doctoral Seminar 2011-2018.

9. Information on participation in the works of research teams realizing projects financed through national and international competitions, including the projects which have been completed and projects in progress, and information on the function performed in the team

9.1 NSC Grant, SONATA 8, 2014/15/D/NZ7/01805, Synthesis and study of the interaction of magnetic nanoparticles coated with human blood serum protein with

selected drugs under normal and artificially induced oxidative stress conditions, **2015-2019**, project completed. **Grant manager**

9.2 NSC Grant, OPUS 7 , 2014/13/B/ST8/04342, Design and synthesis of porous materials based on biopolymers and their composites with magnetite as potential sorbents for NSAID drugs, **2014-2018**, project completed, grant manager Dr Anna Kaczmarek-Kędziera. **Principal investigator**

9.3 NSC Grant, OPUS 8, 2014/15/B/NZ7/00972, Synthesis, characterisation and activity evaluation of biopolymer-modified magnetic nanoparticles as potential enzyme carriers in the synthesis of beta-blocker drugs, **2015-2018**, project completed, supervisor Prof. Dr. Michał P. Marszałł. **Investigator**

9.4 Ministry of Defence Grant under the Basic Research Support Programme **M-1-1-1-024/2018** Investigating the physicochemical properties of intelligent composites with the use of electroactive materials, **2018-2022**, project in progress, manager kmdr Lt. Dr Grzegorz Grzeczka. **Principal investigator**

9.5 MNiSW Iuventus Plus Grant, Research on the potential use of saccharine dyes in modern materials chemistry**, 2013-2015,** project completed, supervisor Dr Anna Kaczmarek-Kędziera. **Principal investigator**

9.6 KBN Grant Low molecular weight boron carriers for BNCT therapy, **2001-2003**, supervisor Prof. Marek Zaidlewicz. **Investigator**

10. Membership in international or national organizations and scientific societies, including the functions performed by the applicant

- Member of the Polish Society of Medicinal Chemistry since 2019

11. Information on internships completed in scientific or artistic institutions, also abroad, including the place, time and duration of the internship and its character

- November 2015 - one-month research internship at the Department of Organic Chemistry, Faculty of Pharmacy, Medical University of Lublin, under the supervision of Prof. Dr. Monika Wujec.

- 28 July 2022 to 10 August 2022 - two-week research internship at the Department of Pharmaceutical Chemistry and Drug Analysis, Faculty of Pharmacy in Hradec Kralove, under the supervision of Prof. Dr. Petr Zimcik.

12. Membership in editorial committees and scientific boards of journals, including the functions performed by the applicant (e.g. editor-in-chief, chairman of scientific board etc.)

Not applicable

13. Information on scientific or artistic works reviewed, in particular, those published in international journals

I have reviewed a total of 121 articles (as of 10.10. 2022)

- **Applied Surface Science** (Elsevier) - 3 papers
- **ACS Applied Materials & Interfaces** - 3 papers
- **Acta Biomaterialia** (Elsevier) - 3 papers
- **ACS Biomaterials Science & Engineering** - 2 papers
- **ACS Applied Polymer Materials** - 1 paper
- **ACS Food Science & Technology** - 1 paper
- **ACS Omega -** 1 paper
- **ACS Applied Nanomaterials -** 1 paper
- **Biomaterials** (Elsevier) - 3 papers
- **Bioactive materials** (Elsevier) - 2 papers
- **Biomacromolecules** (ACS) - 4 papers
- **Carbohydrates** (Elsevier) - 5 papers
- **Catalysts (MDPI)** - 9 works
- **Chemical Papers (Springer)** - 1 paper
- **Coatings (MDPI)** - 3 works
- **Colloids and Surfaces: A** (Elsevier) - 2 papers
- **Colloids and Surfaces: B** (Elsevier) - 4 papers
- **Chemistry Letters** (Ch. Sci. Jap.) - 2 papers
- **Drug Delivery Letters** (Bentham Sci.) - 4 papers
- **International Journal of Biological Macromolecules** (Elsevier) - 12 papers
- **International Journal of Molecular Science** (MDPI) - 4 papers
- **Journal of Nanoscience and Nanotechnology** (aspbs) - 4 papers
- **Journal of Molecular Catalysis B: Enzymatic** - 5 papers
- **Korean Journal of Chemical Engineering** - 5 papers
- **Materials Letters** - 1 paper
- **Materials Science and Engineering C** (Elsevier) - 3 papers
- **Materials** (MDPI) - 2 papers
- **Materials Today Chemistry** (Elsevier) - 1 paper

- **Molecules** (MDPI) - 15 papers
- **Nanomaterials** (MDPI) - 3 papers
- **Polymers** (MDPI) - 2 papers
- **Pharmaceutics** (MDPI) - 5 papers
- **Reactive and Functional Polymers** (Elsevier) - 2 papers
- **Scientific Reports** (Nature) - 1 paper

14. Information on participation in European or other international programmes

not applicable

15. Information on participation in research teams realizing projects other than those defined in section II.9

- **Priority research team BRAIN** (Biomedical and phaRmaceuticAl InterdisciplinNary group) selected as part of the competition organised within the project entitled "Nicolaus Copernicus University in Toruń - vision of research excellence" under the programme entitled "Excellence Strategy - Research University" awarded to Nicolaus Copernicus University based on the decision of the Minister of Science and Higher Education No 0007/SDU/2018/18 of 19.10.2018. Team member.
- **The Torun Centre of Excellence 'Towards personalised medicine',** established as part of the 'UMK Excellence Initiative' by selected scientists from the faculties of pharmacy, medicine, and chemistry faculties. Member of the centre.

16. Information on membership in the teams assessing applications for financing of research projects, applications for scientific awards, applications in other competitions of scientific or didactic character

- Reviewing master's, engineering and bachelor's theses submitted to the competition for the best thesis, organised by the Torun Branch of PTChem and SITPCh
- Reviewing teaching materials prepared under the 'GROWTH' project (Strengthening didactic potential of the Nicolaus Copernicus University in Torun in mathematical and natural sciences, a project co-financed by the

European Union under the European Social Fund - Human Capital Operational Programme (Priority IV: Higher education and science, Measure 4.1 Strengthening and development of didactic potential of universities and increasing the number of graduates in fields of study of key importance for the knowledge-based economy, Sub-measure 4.1.1: Strengthening of didactic potential of universities.

III. INFORMATION ON COOPERATION WITH SOCIAL AND ECONOMIC ENVIRONMENT

1. Information on cooperation with the economic sector

1.1 Collaboration with the plastics recycling company "Ekomer" to implement process innovations. Years 2012-2014.

1.2 Cooperation with the company "Sorimex Sp. z o.o." a leading manufacturer of medical devices. 2013 - present

- Work on an innovative medical device as part of the research agenda of the Regional Operational Programme of the Kuyavian-Pomeranian Voivodeship 2014-2020 - ERDF.
- Establishment of a research and development centre by Sorimex from Toruń as a way of increasing the company's innovativeness.
  Project number: RPKP.01.02.01-04-0033/17

1.3 Cooperation with FFMED sp. z o.o. from Ketrzyn producing medical devices and dressing materials, April 2022 - present. A cooperation agreement on the development of innovative dressing materials has been concluded.

IV. SCIENTOMETRIC INFORMATION

1. Information on the Impact Factor (in the fields and disciplines in which this parameter is commonly used as a scientometric index)

Table 1. Tabulated set of Impact Factor scores (current)

Total IF of publications included in the scientific achievement (A)	**50.248**
Summarised IF of publications outside the scientific achievement published before the PhD (B)	**1.275**
Total IF of publications outside the scientific achievement published after the PhD (C)	**133.887**
Total IF (A+B+C)	**185.41**

2. Information on the number of citations of the applicant's publications, including a separate list of self-citations

Table 2. tabulated citations of published papers (**excluding self-citations**, as of 07.10.2022, according to Scopus)

Number of citations of publications included in the achievement	**183**
Number of citations of all published scientific papers	**537**

3. Information on h-index held

- 14 (until PhD 2009 h= 1) according to Web of Sci. Coll. (as of 7.10.2022)
- **14** (until PhD 2009 h= 1) according to Scopus (as of 7.10.2022)
- **16** (until PhD 2009 h= 1) according to Google Scholar (as of 7.10.2022)

Field Weighted Citation Impact from the last 5 years (according to Scopus)

(2016>2021): total: **1.18 (2022- 2.26),** Materials Sci: **1.73 (2022- 4.53)**

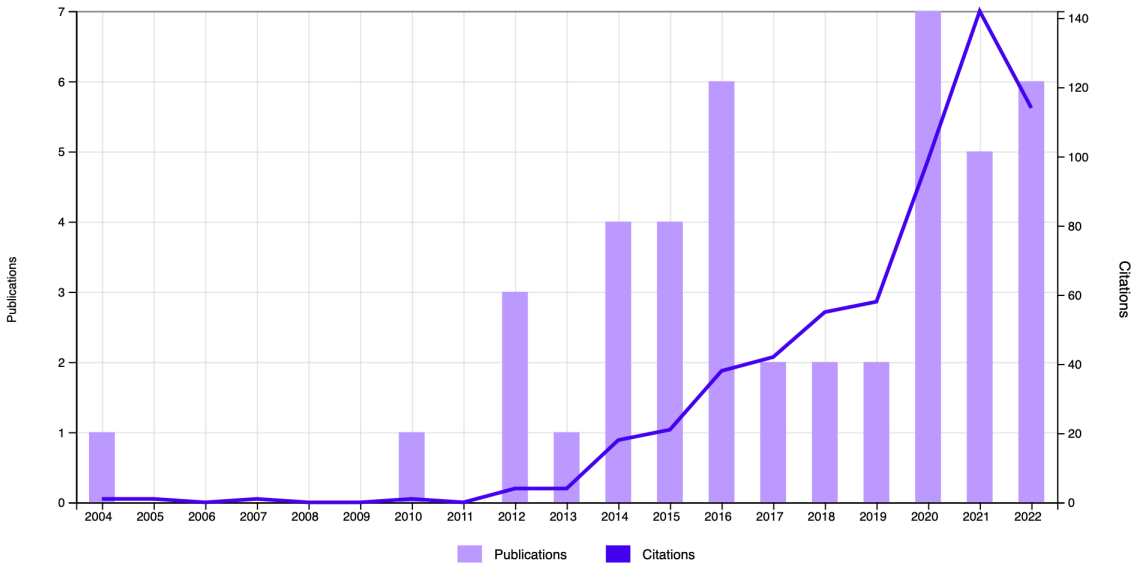

Fig.1 Dynamics of scientific output according to WoS (as at 07. 10. 2022)

Table 3 Author position (according to Web of Sci. Coll. as of 10.10.2022) [%]**.**

First Author	Corresponding author	Last Author
25%	**34%**	**27%**

4. Information on the number of the points awarded by the Ministry of Science and Higher Education

Table 4. tabulated set of MNiSW scores of published papers (as of 10.10.2022)

Summarised MNiSW score of publications included in scientific achievements (A)	**970**
Summarised MNiSW score of publications outside the scientific achievement prior to award the PhD degree (B)	**40**
Summarised MNiSW score of publications outside the scientific achievement after award the PhD degree (C)	**3405**
Summative MNiSW score of all published scientific papers (A + B + C)	**4415**

Table **5** Tabular summary of scientific achievements

	Prior to award PhD degree	After obtaining PhD degree	Total
1. Original creative work			
IF journals highlighted in Journal Citation Reports (JCR)	**0**	**42**	**42**
Publications in a peer-reviewed national or international journal	**1**	**1**	**2**
Textbooks and scripts	**0**	**1**	**1**
Chapters in books and monographs	**0**	**4**	**4**
Corresponding author in JCR publications	**0**	**15**	**15**
First author in JCR publications	**0**	**11**	**11**
Total Impact Factor from the year of publication	**0**	**145.360**	**145.360**
Current Impact Factor	**1.257**	**184.135**	**185.41**
Average IF per publication according to JCR	**1.257**	**4.282**	**4.214**
Number of points MNiSW	**40**	**4375**	**4415**
Number of citations according to Scopus (without self-citation)	**0**	**537**	**537**
Hirsch index according to Scopus database	**1**	**14**	**14**
2. presentations at national or international scientific conferences			
Authorship and co-authorship lectures and communications conferences and conventions	**3**	**48**	**51**
Conference and congress posters	**6**	**83**	**89**
3. research projects (leader)	**0**	**1**	**1**
4 Research projects (principal investigator)	**1**	**4**	**5**
5. reviewing articles in JCR journals	**0**	**121**	**121**

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Marta Ziegler-Borowska