

Prospective supervisor's form

Name of the supervisor: Maria Gazda

Academic title: Ph.D., D.Sc., Prof.

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Faculty of Applied Physics and Mathematics

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Discipline¹ materials engineering [IMa] none

Optional

Key words (obligatory four key words describing research interests / expertise):

proton conductors

mixed conductors

conducting ceramics

X-ray diffractometry

Bibliometric indicators

1. Number of journal publications in WoS/ Scopus 167/172

2. Citations excluding self-citations WoS 1778 Scopus 1829

3. Hirsch index WoS 20 Scopus 22

1. The number of PhD students who have graduated under your supervision: 4

2. The number of PhD students currently supervised:

a. within the current doctoral school 1

b. within doctoral studies (previous system) 2

3. Are you currently accepting new PhD students:

a. Polish Yes/No Yes

b. Foreign Yes/No Yes

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Research interests or topics offered for PhD research (no more than 2000 characters)ⁱⁱ

Generally speaking, the research concerns ceramic proton conductors, ceramic ion conductors, ceramic electronic conductors and ceramic mixed conductors. The choice of ceramics is governed by possible applications in solid oxide fuel cells, electrolyzers, sensors or other electrochemical devices. The research involves both synthesis and studies of properties of oxides. The main aim of the studies is to modify an oxide in such a way that it achieves high proton/other charge carrier conductivity. Our most recent research is focused on proton conductivity in high entropy perovskites. We utilize various methods to determine the underlying phenomena of charge transport in these materials.

The PhD research will involve:

materials synthesis which includes optimisation of the composition, microstructure of the material and synthesis method and conditions;

studies of materials structure, structural phase transitions, microstructure;

studies of materials thermal and electrical/electrochemical properties;

Funding or special equipment needed to carry out a PhD project ⁱⁱⁱ:

1. Is funding available for experimental work: *Yes/No/not needed*

Yes

2. Is the equipment needed to complete a PhD project

available in your lab/department: *Yes/No/not needed*

Yes

Most important publications no more than 5 published after 1.01.2018

No	Authors/title/journal	Number of points according to the current list of the Ministry of Science and Higher Education	Publication year
1.	Structural properties and water uptake of $STi_{1-x}Fe_xO_{3-x/2-\delta}$, Tadeusz Miruszewski, Kacper Dzierzgowski, Piotr Winiarz, Sebastian Wachowski, Aleksandra Mielewczyk-Gryń and Maria Gazda, <i>Materials</i> , 13(4),0965	140	2020
2.	Evolution of magnetic and transport properties in $(Cr_{1-x}Mn_x)_2AlC$ MAX-phase synthesized by arc melting technique, Kirill V.Sobolev, Kamil K.Kolincio, Andrey Emelyanov, Aleksandra Mielewczyk-Gryń, Maria Gazda, Marta Roman, Anna Pazniak, Valeria Rodionova, <i>Journal of Magnetism and Magnetic Materials</i> , 493, 165642	140	2020

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3.	Functional phase bistability in a nanocrystalline RbMn[Fe(CN) ₆] thin film fabricated by matrix-assisted laser evaporation, Dominik Maskowicz, Mirosław Sawczak, Rafał Jendrzewski, MariaGazda, HirokoTokoro, Shin-ichi Ohkoshi, Yann Garcia, Gerard Śliwiński, Scripta Materialia, 183, 50	140	2020
4.	Electric and magnetic properties of lanthanum barium cobaltite, Szpunar, I., Wachowski, S., Miruszewski, T., Dzierzgowski, K., Górnicka, K., Klimczuk, T., Sørby, M.H., Balaguer, M., Serra, J.M., Strandbakke, R., Gazda, M., Mielewczyk-Gryń, A, Journal of the American Ceramic Society, 103, 1809-1818	100	2020
5.	High-temperature properties of titanium-substituted yttrium niobate, Mielewczyk-Gryń, A., Winiarz, P., Wachowski, S., Gazda, M., Journal of Materials Research, 34, 3312-3318	70	2019

Most recent externally funded projects you were involved in – no more than 3

No	Project title, the name of the Principal Investigator (PI) and the institution the project was carried out	Years	Role in the project ⁱ
1.	Triple conducting oxides (UMO/2016/23/B/ST5/02137), Maria Gazda, NCN	2017-2021	PI
2.	Strain engineering of proton conducting oxides. UMO-2017/27/L/ST5/03185, Maria Gazda, NCN	2018-2021	PI
3.			PI

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Additional relevant information – (no more than 1600 characters)^v



ⁱ You may select up to two disciplines out of 12 disciplines represented in the Doctoral School

ⁱⁱ Observe the limit of not more than 2000 characters

ⁱⁱⁱ Leave only one answer

^{iv} Select the role in the project: PI stands for principal investigator (refers to the holder of an independent grant and the lead researcher for the grant project), Co-I for co-investigator (Co-I assists the principal investigator in the management and leadership of the research project), R for researcher

^v Add any other relevant information e.g. awards for PhD students whom you supervised (no more than 1600 characters)