

# Prospective supervisor's form

Name of the supervisor: Tomasz Klimczuk

Academic title: Professor

Orcid ID number: <https://orcid.org/0000-0000-0002-7089-4631>

Gdańsk University of Technology Faculty of Applied Physics and Mathematics

Department of Solid State Physics

Phone: +48 583486611

E-mail: tomasz.klimczuk@pg.edu.pl

Personal web page: <https://pg.edu.pl/tomasz.klimczuk>

Discipline: materials engineering [IMa] none

Optional

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

# new inorganic compounds

# synthesis

# physical properties

# superconductivity

## Bibliometric indicators

1. Number of journal publications in WoS/ Scopus 190 / 184

2. Citations excluding self-citations WoS 3287 Scopus 3399

3. Hirsch index WoS 28 Scopus 28

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

2. The number of PhD students currently supervised:

a. within the current doctoral school 0

b. within doctoral studies (previous system) 5

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)<sup>ii</sup>

In my laboratory we use solid state chemistry and arc-melting method to make polycrystalline samples. We also grow crystals using solution growth, vapour transport and floating zone method.

We are very much interested in powder x-ray diffraction studies and our laboratory is equipped with superior D2Phaser x-ray diffractometer (Bruker).

Whatever we grow - we want to know what are the physical properties of a synthesized compound. Low temperature heat capacity, resistivity, magnetoresistivity and magnetic susceptibility are studied by Physical Property Measurement System (Quantum Design) down to 1.9 K and under magnetic field up to 9 T.

What are we looking for? We like superconductors, materials with long-range magnetic ordering, etc. In short - we are interested in strongly correlated electron systems.

### Funding or special equipment needed to carry out a PhD project<sup>iii</sup>:

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.	Karolina Górnicka, Sylwia Gutowska, Michał J. Winiarski, Bartłomiej Wiendlocha, Weiwei Xie, R. J. Cava, and Tomasz Klimczuk Superconductivity on a Bi Square Net in LiBi Chemistry of Materials	200	2020
2.	Elizabeth M. Carnicom, Weiwei Xie, Zoe Yang, Karolina Górnicka, Tai Kong, Tomasz Klimczuk, and Robert J. Cava Importance of Specific Heat Characterization when Reporting New Superconductors: An Example of Superconductivity in LiGa <sub>2</sub> Rh Chemistry of Materials	200	2019

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3.	Karolina Górnicka, Weiwei Xie, Elizabeth M. Carnicom, Robert J. Cava, and Tomasz Klimczuk Synthesis and physical properties of the 10.6 K ferromagnet NdIr3 Physical Review B	140	2019
4.	Elizabeth M. Carnicom, Weiwei Xie, Tomasz Klimczuk, Jingjing Lin, Karolina Górnicka, Zuzanna Sobczak, Nai Phuan Ong, Robert J. Cava TaRh2B2 and NbRh2B2: Superconductors with a chiral noncentrosymmetric crystal structure	200	2018
5.	Kamil K. Kolincio, Marta Roman, and Tomasz Klimczuk Charge density wave and large nonsaturating magnetoresistance in YNiC2 and LuNiC2 Physical Review B	140	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 <sup>iv</sup>
1.	New Materials with Electronic and Magnetic Corelations National Science Centre (Poland)	2019-2021	PI
2.	New Heusler-type compounds based on alkaline earth metals National Science Centre (Poland)	2018-2021	PI
3.	New routes for discovering superconducting compounds National Science Centre (Poland)	2017-2019	PI

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### Additional relevant information – (no more than 1600 characters)<sup>v</sup>

In my laboratory there are two PhD students who obtained prestigious Diamentowy Grant funded by Ministry of Science and Higher Education. Two of my PhD students conduct their research with the support from National Science Centre (Poland) - PRELUDIUM projects.

I am looking for a passionate PhD student who is not afraid of working with hot furnaces, a gas torch, not afraid of using an x-ray diffractometer and a glove-box.

It is expected that 2 of 5 PhD students in my research team will graduate this year.

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

<sup>ii</sup> Observe the limit of not more than 2000 characters

<sup>iii</sup> Leave only one answer

<sup>iv</sup> 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

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