



**MARIE-SKLODOWSKA CURIE FELLOWSHIP, EU**



Prof. dr hab. inż. **Artur Bednarkiewicz**

Deputy Director for Scientific Affairs  
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**Institute of Low Temperature and Structure Research,  
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**<https://www.intibs.pl/en>**





## FACTS & FIGURES

- One of **top polish institutes** (2 disciplines **chemistry** and **physics**)
- **102 scientists**, >30 ph.d. students, c.a. 290 articles / year
- **Successful in external research projects acquisition and realization** (82 running project, total budget 80 mln PLN ~ 19 mln\$/17 mln€ ) – polish, bi-lateral and international
- **Doctorate school** & PhD and PhD hab. Degrees in physics and chemistry
- **INT-TECH technology transfer spin-off** (<http://ctt-intech.pl/en/>)
- **Wrocław** is:
  - Located on south-west part of Poland – close to Germany and Czech Republic, warmest part of Poland
  - Beautiful, historical city, well communicated (train, airport) with EU/World
  - University city, ca. 700 000 inhabitants + 200 000 students/year



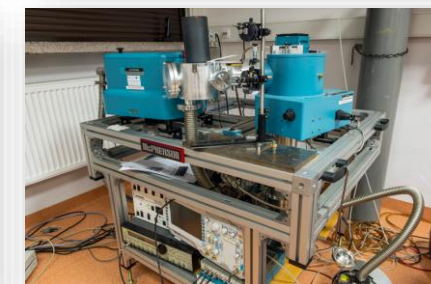
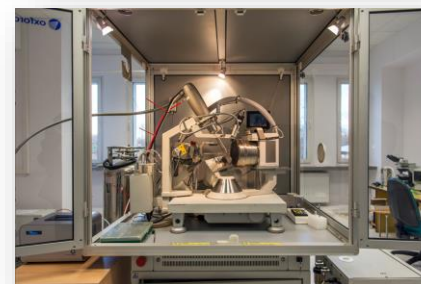


## RESEARCH

- We are specializing in physics, chemistry and materials science of magnetic  $5f$ - and  $4f$  - electron systems, superconductors, catalysis, phase transitions, luminescence and optical (bio) spectroscopy

## 7 SCIENTIFIC DIVISIONS:

- Theory of Condensed Matter
- Nanomaterials Chemistry and Catalysis
- Optical Spectroscopy
- Magnetic Research
- Structure Research
- Low Temperature and Superconductivity
- Biomedical Physico-Chemistry



## WHAT WE OFFER

- Excellent scientific and friendly environment : modern equipment, theory & experiments
- We care : Gender Equality plan, HR Excellence in Research, Green Charter
- Post-docs (NCN), NAWA, local, bi-lateral and international (COST, PATHFINDER, MSCA) grant acquisition and realization as coordinator or partner



## EXAMPLES OF POSSIBLE COLLABORATIONS



### **MIROSŁAW MACZKA [ [M.Maczka@intibs.pl](mailto:M.Maczka@intibs.pl) ]**

- New hybrid perovskites with functional properties such as luminescence, ferroelectricity and multiple nonlinear optical phenomena (materials science)
- Lattice dynamics of hybrid perovskites (spectroscopy)

Brief info: H-index=46, PI in numerous National Research Council projects



### **DARIUSZ KACZOROWSKI [ [D.Kaczorowski@intibs.pl](mailto:D.Kaczorowski@intibs.pl) ]**

- Emergent phenomena in strongly correlated electron systems: quantum criticality, unconventional superconductivity, heavy fermions, exotic magnetic orders, spin and valence fluctuations, non-Fermi liquids
- Topological matter : extraordinary electronic transport in topological insulators and semimetals, interplay of topology and magnetism, topological superconductors

Brief info: >600 publications, 3 monographs, >6600 citations, H=35, PI in numerous National Research Council and EU projects, member of the Polish Academy of Sciences



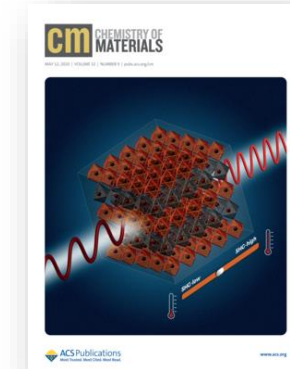
## EXAMPLES OF POSSIBLE COLLABORATIONS



### ANNA GAGOR [ [A.Gagor@intibs.pl](mailto:A.Gagor@intibs.pl) ]

- Structural analysis of crystalline materials via single-crystal and powder x-ray diffraction, structure-property relations and phase transitions in ferroic and multiferroic materials;
- disordered, commensurately and incommensurately modulated structures

Brief info: H-index = 33; PI and researcher in numerous National Research Council projects, a member of IUCr Commission on Inorganic and Mineral Structures



### ARTUR BEDNARKIEWICZ [ [A.Bednarkiewicz@intibs.pl](mailto:A.Bednarkiewicz@intibs.pl) ]

- New photon avalanching materials/mechanisms and more efficient up-converting luminescent nanomaterials (materials science)
- Superresolution imaging, nano-bio-imaging and other applications (imaging, bio-sensing, neuromorphic computing, new DNA sequencing methods)

Brief info: H-index = 42; PI in numerous National Research Council and EU projects.





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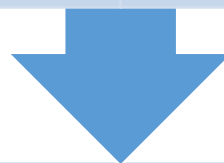




# WHERE

Institute of Geophysics PAS, Warsaw

Department of Hydrology and Hydrodynamics

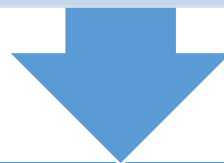


# WHY

top Institute in Poland, long-expertise  
in international projects and in hosting  
researchers

interaction with international scientists  
with different backgrounds

development of scientific and soft  
skills, opportunity to interact with  
MSCA fellows



# SUPERVISOR



dr. hab. Michael Nones - Prof PAN

expertise in monitoring/modelling fluvial environments

MSCA experience - chair MCAA Poland Chapter

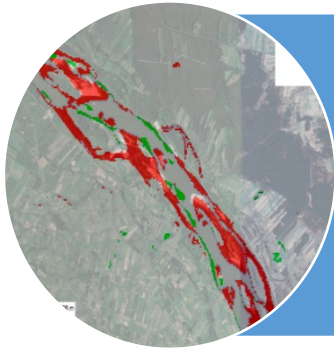
help in training and networking activities



# HUMANS' RELATIONSHIPS WITH RIVERS



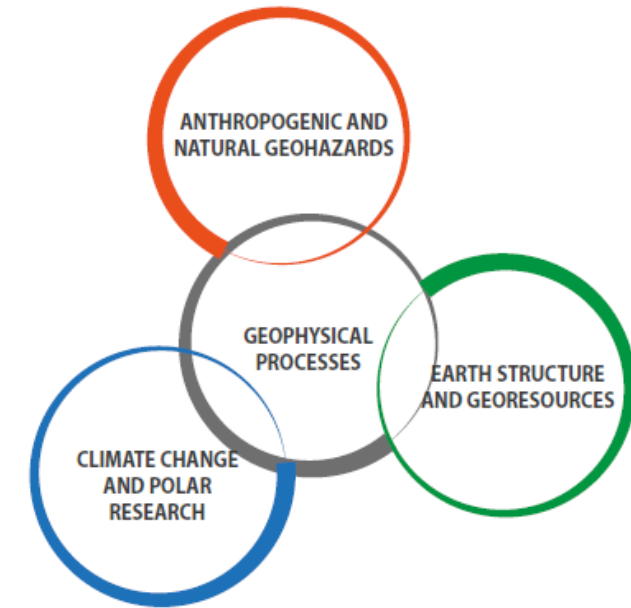
extreme events are likely to happen in the future, and current river management approaches might be outdated



changes in water dynamics will change fluvial dynamics, affecting vegetation, sediments and pollutants transport and spread



people living along watercourses will have to adapt to new conditions, but how?



[Michael Nones](#)

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