Poznan University of Technology TEAM

PhD Remigiusz ŁABUDZKI
Assistant Professor/
PUT AMAZE Coordinator

PhD Student Natalia WIERZBCKA
Assistant

PhD Adam PATALAS
Assistant

PhD Student Paweł ZAWADZKI
Assistant

PhD Student Jakub Gapsa

PhD Remigiusz ŁABUDZKI

Assistant Professor/PUT AMAZE Coordinator

Position – senior lecturer in Planning Technology Department of PUT

INTERESTS:

- Technology planning
- CAD/CAM in Manufacturing Systems
- Enterprise Logistics
- Vision Systems in Manufacturing Processes
- Rapid Prototyping techniques in Manufacturing

Experience (projects):

BRIGHT

- Boosting the scientific excellence and innovation capacity of 3D printing methods in pandemic period

EMERALD

- European network for 3D printing of biomimetic mechatronic systems

PhD student Natalia WIERZBICKA

Faculty of Mechanical Engineering
Institute of Mechanical Technology
Department of Technology Design

Completed higher education:
Biomedical Engineering - Poznań University of Technology,
Faculty of Mechanical Engineering

Topic of doctoral dissertation:
Tribological properties of polymer- and silicone-based composites with inorganic additives

Manager of tribological laboratory

Our device:

- Anton Paar step 700 with the micro-tribo tester MCT³ and the nano-scratch tester NST³
- Brucker UMT Tribometr
- Alemnis In-Sem Mechanical tester
- Fischer Picodentor HM500
- Fischer XRF Spectrometer
- Brookfield Viscometer
- Adhesion tester Positest AT-A
- Microhardness tester FM-700
- 3 original tribology testers

Position – Assistent in Technology Department of PUT

INTERESTS:

- Tribology
- CAD/CAM in Manufacturing Systems
- Rapid Prototyping techniques in Manufacturing
- Robotics
- Biomedical Engineering

Experience (projects):

BRIGHT

- Boosting the scientific excellence and innovation capacity of 3D printing methods in pandemic period

EMERALD

- European network for 3D printing of biomimetic mechatronic systems

CONFERENCE OF BIOMEDICAL ENGINEERING

- Coordinator of the event organized for student by student and University Staff, a conference which aim is to connect the worlds of science, industry and medicine

List of publications from the last 3 years. The total score is 15 items.

1. The friction of the composite based on polyethylene with inorganic additives/ **Natalia Wierzbicka** (WIM), Rafał Talar (WIM), Karol Grochalski (WIM), Adam Piasecki (WIMiFT), Miłosz Węgorzewski and Adam Reiter // Materials – 2023 (140pkt)
2. Influence of dispersed phase content on the mechanical properties of electroless nanocomposite Ni-P/Si3N4 and hybrid Ni-P/Si3N4/graphite layers deposited on the AW-7075 alloy/ Kazimierz Czapczyk, Paweł Zawadzki (WIM), **Natalia Wierzbicka** (WIM) //Applied Surface Science (140pkt)
3. Tribological properties of hardened surfaces constituted by various methods of mechanical processing / Paweł Zawadzki (WIM), **Natalia Wierzbicka** (WIM), Rafał Talar (WIM), Łukasz Burysz //TRIBOLOGIA - 2021, vol. 298, no. 4, s. 57-72 (70pkt)
4. The Friction of Structurally Modified Isotactic Polypropylene / **Natalia Wierzbicka** (WIM), Tomasz Sterzyński, and Marek Nowicki (WIMiFT)// Materials - 2021, vol. 16, no. 15 (140pkt)
5. Microstructure and Properties of Electroless Ni-P/Si3N4 Nanocomposite Coatings Deposited on the AW-7075 Aluminum Alloy / Kazimierz Czapczyk, Paweł Zawadzki (WIM), **Natalia Wierzbicka** (WIM), Rafał Talar (WIM) // Materials - 2021, vol. 14, no. 16 (140pkt)
6. Evaluation of deterioration of engine oil properties in the function of mileage / **Natalia Wierzbicka** (WIM), Dominika Szadkowska, Adam Patalas (WIM), Rafał Talar (WIM), Remigiusz Łabudzki (WIM), Paweł Zawadzki (WIM) // Journal of Physics: Conference Series - 2020, vol. 1426 (40pkt)
7. The construction of an automated bicycle parking / Remigiusz Łabudzki (WIM), Rafał Talar (WIM), Paweł Zawadzki (WIM), Adam Patalas (WIM), **Natalia Wierzbicka** (WIM), Dominika Szadkowska // Journal of Physics: Conference Series - 2020, vol. 1426 (40pkt)

In my free time:

Adam Patalas P.hD. Eng.

E-mail: adam.patalas@put.poznan.pl

Institute of Mechanical Technology

Mechanical Engineering Faculty

Poznan University of Technology

Education:

2016/06 – 2022/06 Warsaw University of Technology, PhD, Faculty of Mechatronics, **Biomedical Engineering Discipline**
2015/10 – 2020/09 Poznań University of Technology, PhD studies, 3rd cycle studies
2014/03 – 2015/06 Poznań University of Technology, **Mechatronics**, 2nd cycle, master's studies (specialization: Mechatronic Structures),
2011/10 – 2015/02 Poznań University of Technology, **Biomedical Engineering**, First-cycle engineering studies,
2010/10 – 2014/02 Poznań University of Technology, **Materials Engineering**, First-cycle studies, engineering

Experience (projects):

Currently – from 2015/10 – Poznań University of Technology – Scientific and teaching assistant at the Technology Design Department: Responsible for the following subjects: Spine and limb prosthetics, Computer-Aided Technology.

Currently – from 2019/04 - ENforce Medical Technologies Sp. z o.o. – Technologist - Tasks: Development of a vacuum prosthetic socket intended for use with a foot prosthesis; A prototype of a bionic foot and miniaturized conceptual versions of MR dampers were developed; Development, implementation and validation of a stand for determining the characteristics of MR dampers.

2017/09 – 2015/10 - Casimir the Great University in Bydgoszcz - Assistant at the Institute of Technology, conducting project classes and seminars on the following subjects: Basics of medical bioengineering, also running laboratories on: Elements of mechatronics, Electrical engineering and electronics, Automation and robotics.

List of publications from the last 2 years. The total score is 33 items.

1. Swathi Raghu, Patrick Hartwich, **Adam Patalas**, Mateusz Marczewski, Rafał Talar, Christian Pritzel, Manuela S. Killian. 2023. Nanodentistry aspects explored towards nanostructured ZrO2: Immobilizing zirconium-oxide nanotube coatings onto zirconia ceramic implant surfaces Open Ceramics - 2023, vol. 14, s. 100340-1-100340-6
2. Wojciech Smułek, Maria Ratajczak, **Adam Patalas**, Adam Voelkel, Ewa Kaczorek, Mariusz Sandomierski. 2023. Agar composites containing Zinc zeolite infused with Quillaja saponins exhibit improved structural properties and anti-Candida activity Environmental Technology & Innovation - 2023, vol. 32, s. 103278-1-103278-10
3. Paweł Zawadzki, **Adam Patalas**, Remigiusz Łabudzki, Rafał Talar. 2023. Measurement of thermal conductivity of the cortical bone: experimental studies and comparative analysis Journal of Physics: Conference Series - 2023, vol. 2540, s. 012035-1-012035-9
4. Zuzanna Buchwald, Mariusz Sandomierski, Wojciech Smułek, Maria Ratajczak, **Adam Patalas**, Ewa Kaczorek, Adam Voelkel. 2023. Physical–chemical and biological properties of novel resin-based composites for dental applications Polymer Bulletin - 2023, vol. 80, iss. 10, s. 11249-11272
5. Mariusz Sandomierski, Wiktoria Stachowicz, **Adam Patalas,** Karol Grochalski, Wiesław Graboń, Adam Voelkel. 2023. Characterization of Magnesium and Zinc Forms of Sodalite Coatings on Ti6Al4V ELI for Potential Application in the Release of Drugs for Osteoporosis. Materials, vol. 16, iss. 4, s. 1710-1-1710-17 (**IF: 3,62**)
6. Mariusz Sandomierski, Monika Zielińska, Katarzyna Adamska, **Adam Patalas**, Adam Voelkel. 2022. Calcium montmorillonite as a potential carrier in the release of bisphosphonates. New Journal of Chemistry - vol. 46, iss. 7, s. 3401-3408 **(IF: 3,59)**
7. Mariusz Sandomierski , Monika Zielińska, Tomasz Buchwald**, Adam Patalas**, Adam Voelkel. 2022. Controlled release of the drug for osteoporosis from the surface of titanium implants coated with calcium titanate. Journal of Biomedical Materials Research Part B, vol. 110, iss. 2, s. 431-437 **(IF:3,37**)
8. Paweł Zawadzki, Rafał Talar, **Adam Patalas**, Stanisław Legutko. 2022. Influence of Machining Parameters on Cutting and Chip-Formation Process during Cortical Bone Orthogonal Machining. Materials, vol. 15, iss. 18, s. 6414-1-6414-24 (**IF: 3,62**)

MSc. Eng. Paweł Zawadzki, PhD

Faculty of Mechanical Engineering
Institute of Mechanical Technology
Department of Technology Design

Completed higher education:
Biomedical Engineering - Poznań University of Technology, Faculty of Mechanical Engineering

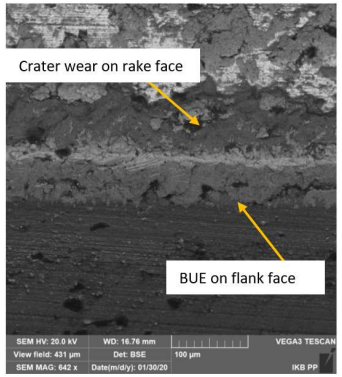
Topic of doctoral dissertation:
A method for precise shaping of bone surfaces

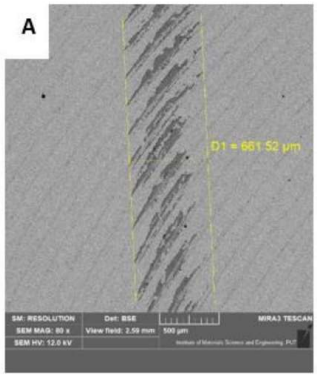
SCIENTIFIC INTERESTS

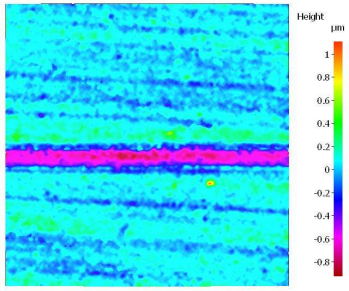
Biomedical engineering: design of implants and endoprostheses, development of surgical equipment

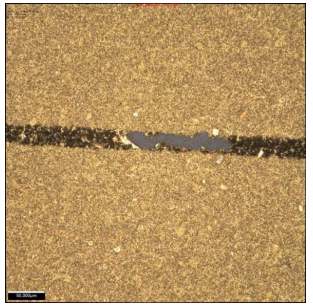
Machining: biomaterials processing, hard and soft tissue processing, wear of cutting tools

Tribology: biotribology, biomimetics in tribological issues, micro and nanotribology, surface engineering







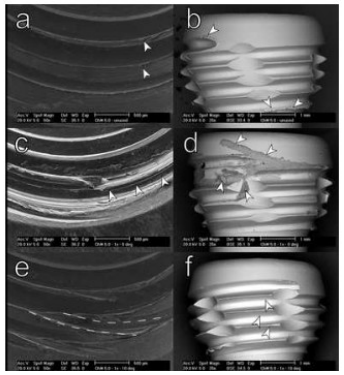


Scientific articles published in journals such as:

- WEAR
- Scientific Reports
- Journal of Orthopedic Trauma
- PLOS ONE
- Veterinary and Comparative Orthopedics and Traumatology
- Materials
- Journal of Functional Biomaterials

Patents:

- endoprostheses
- surgical instrumentation



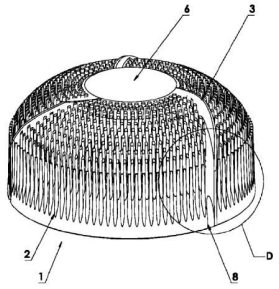
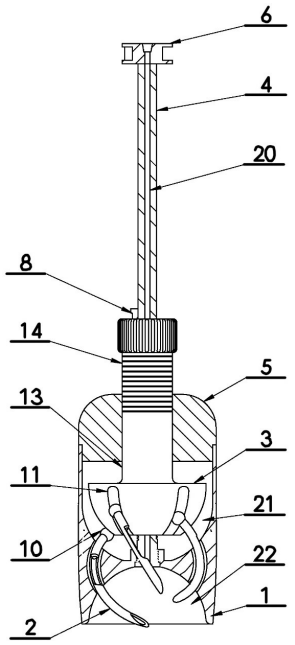


Fig. 5



Polish folk traditions

Production of traditional folk instruments: greater poland bagpipes, violins, drums and basses.

Msc Eng. Jakub Gapsa

PhD Student / Junior Unity Developer

Member of the team working on VR technologies at
Poznan University of Technology,
PhD student at PP Doctoral School (2nd year)
– Faculty of Mechanical Engineering

Experience (projects):

- Contractor in the project "Flexible system for increasing the competences of technical service employees using virtual reality techniques" (beneficiary: Enea Operator) - project completed with the implementation of the system
- VR specialist in the project "Innowacyjne kształcenie elektryków dostosowane do branży energetycznej" (Component Ill, Institutional cooperation for improving the quality and relevance of vocational education and training (VET) and continuing education, beneficiary: CKZiU Elektryk Nowa Sól) - project completed with implementation of the system
- VR specialist - building the Avatar Scoliosis 3D application in the project "Longitudinal assessment of changes in psychosocial functioning of patients with adolescent idiopathic scoliosis before, during and after treatment. A quantitative and qualitative study." (National Science Center, beneficiary: Medical University of Poznan), an activity completed with the implementation of an application for the study of patients in an orthopedic hospital

“Scoliosis 3D” - A Virtual-Reality-Based Methodology Aiming to Examine AIS Females’ Body Image

https://doi.org/10.3390/app13042374

VR specialist, conducting classes and trainings for students of technical schools, in the measure "Czas zawodowców BIS-zawodowa Wielkopolska"

In my free time:

- board games
- fantasy books
- disc golf

Contact:
Natalia Wierzbicka
E-mail: natalia.wierzbicka@put.poznan.pl
Phone: +48 660 509 118