**Profile of the Faculty of Materials Science and Engineering of the Warsaw University of Technology**[[1]](#endnote-1)

The Faculty of Materials Science and Engineering of the Warsaw University of Technology is a leading research and teaching centre in the field of materials engineering in Poland. It was formally established in 1991 in the place of the Institute of Materials Engineering and operated since 1975 like a faculty. Now the Faculty continues an almost 100-year-long tradition of education and research in the field of materials at the Warsaw University of Technology.

The Faculty of Materials Science and Engineering has full academic rights. Students are taught in a three-cycle system. First-cycle graduates are awarded the degree of BSc in Engineering, while second-cycle graduates – MSc in Engineering. The third cycle are doctoral programmes. The Faculty conducts doctoral and habilitacja proceedings for its own staff and academics from other Polish and foreign institutions. So far, 301 doctoral degrees and 57 habilitacja degrees were awarded, 31 applications for the title of professor were made and 1 title of professor were awarded.

The Faculty of Materials Science and Engineering actively combines teaching and research, done by academic and academic/teaching staff of the University; on 31.12.2019, the Faculty employed: 38 academic teachers, including 15 habilitated doctors and 11 full professors, 57 research/technical staff and engineering/technical staff, including 39 with the degree of PhD in technical sciences and 81 doctoral students. Administrative and financial services are provided by the administration staff (25 persons).

High quality of education is proved by the A+ category awarded by the Ministry of Science and Higher Education. The organizational structure of the Faculty comprises four divisions, including one Division of Surface Engineering, focusing on surface engineering.

Research activity of the Faculty is visible through a large number of completed projects (financed both from Polish and European sources) and publications (these are mostly publications in renown journals from the Philadelphia List of relatively high impact factor). The Faculty also actively collaborates with industrial and foreign partners.

The organisational structure of the Faculty comprises four teaching divisions:

1. Division of Materials Design (acting as head: WUT professor Wojciech ŚWIĘSZKOWSKI)

2. Division of Structural and Functional Materials (head: professor Marcin LEONOWICZ)

3. Division of Surface Engineering (acting as head: WUT professor Jerzy R. SOBIECKI)

4. Division of Ceramic and Polymer Materials (head: professor Andrzej OLSZYNA)

The Faculty also has workshops and research teams at the division or faculty level.

Research done at the Faculty of Materials Science and Engineering of the Warsaw University of Technology is connected with the main areas of modern materials science and materials engineering. Research is of interdisciplinary character covering physics, chemistry, biology and medicine, linked with advanced methods of materials manufacturing, such as polymer materials and methods of characterization and description of the structure of materials of complex chemical composition, including polymer nano- and micro-composites, materials and functional layers. The conducted work particularly focuses on the relations between the macro, micro and nanostructure and materials properties used in various industries, such as aviation, power engineering, medicine and environmental protection. Research covers the following issues:

1. Nanomaterials and amorphous materials
2. Intelligent and functional materials
3. Modern ceramic, polymer and composite materials
4. Surface engineering
5. Biomaterials
6. Materials for power engineering
7. Materials for aviation
8. Materials degradation

For many years, the Faculty has also collaborated with the industry and has wide experience in completion and management of research projects, development work and implementation of innovative technologies related to layers, giving them functional properties and laser texturing. Work done in this field includes:

• materials degradation in industrial installations under the influence of high temperatures, mechanical strain and aggressive environment (e.g., hydrogen);

• technical safety, including Polish and EU regulations;

• introduction of new structural and functional materials (of special thermal properties) and techniques of monitoring of their degradation;

• expert opinions on the causes of materials destruction.

*Important: (one may give titles of projects on the topic related to the proposed project)*

*Faculty staff participated, for example, in completion of projects financed from Polish and EU funds on the topics related to the proposed project;*

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In 2018/2019, Faculty staff published 145 articles listed in scientific achievements of the unit and 84 articles were published in reviewed journals from the A list of the Ministry of Science and Higher Education (with impact factor), others in journals from the B list of the Ministry or in conference proceedings included in the Web of Science database. The WUT Faculty of Materials Science and Engineering has advanced and unique research equipment which allows to conduct various fundamental and technological studies in the field of materials engineering. Wide possibilities offered by the equipment allow a comprehensive approach to the issue of ice-phobic surfaces studies in the field of manufacturing modern materials and control of their quality allowing to fully characterize them in terms of their structure (also at the atomic level) and properties. It is possible to assess the quality of samples at each stage of the process of manufacturing and modification of polymer materials and their composites. The Faculty has modern equipment for, e.g., studying and characterisation of materials, which includes a number of microscopes SEM, TEM, HRSEM/STEM, AFM, FIB, a goniometer for studies of hydrophobic properties also at lower temperatures, testing machines for static and dynamic tests, an Ares rheometer with a magnetic field generation device, microtomes with devices for cooling in the course of cutting samples for microscopic observations, devices for thermal analysis: DSC/MDSC, TGA, FTIR, DMA. The Faculty’s X-ray micro- and nano-tomographs allow to obtain tomographic images (cross-sections) of the studied object and then to transform them into 3D images.

*Description of a company – partner in the submitted project – if applicable*

1. Figures for 2019 [↑](#endnote-ref-1)