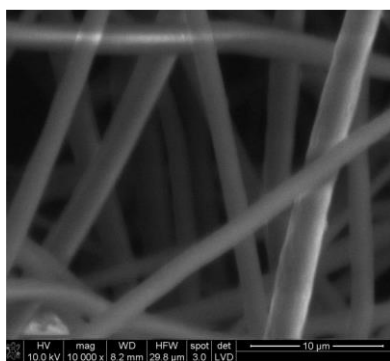
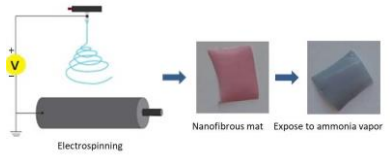
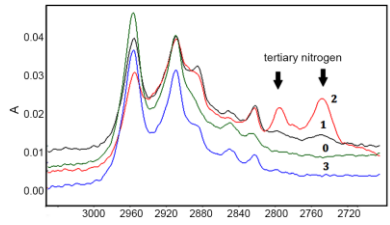




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name of the unit: DIVISION OF PHYSICAL CHEMISTRY OF POLYMERS Institute of Material Science of Textiles and Polymer Composites, Lodz University of Technology		symbol: I-42 http://www.k48.p.lodz.pl/
head of the unit: Prof. dr hab. inż. Dawid Stawski	potential promoters: Prof. dr hab. inż. Dawid Stawski Dr hab. inż. Zbigniew Draczyński, prof. uczelni	contact person: Prof. dr hab. inż. Dawid Stawski tel: 42-631-33-56 dawid.stawski@p.lodz.pl
scope of activities: The research activities of the employees of the Department of Chemistry and Physical Chemistry of Polymers focus on the production of polymers and copolymers by means of polymerization and polycondensation. New polymers, mainly fiber-forming, with specific functional properties (bactericidal, bioactive, and thermally resistant) are produced, and chemical and physical modifications are made on macromolecular compounds of natural and synthetic origin, mainly used for the functionalisation of textiles. The employees of the Department also deal with the physicochemical characteristics of polymers, the analysis of their properties, and the study of the relationship between their structure and properties.		graphic material   
present activities: The work currently underway at the Department focuses on: <ul style="list-style-type: none">- modifications of chitin and chitosan to obtain derivatives with new properties,- production of fibers, films, nonwovens and other products from chitin and chitosan derivatives,- obtaining vinyl copolymers containing a component with bioactive properties,- the use of new methods of modification of the surface layer of fibers and films, such as entrapment, layer-by-layer or cross-linking technique.		
Future activities: The future activity will focus on the preparation of polymers with a modified surface layer and copolymers, including grafted ones, intended for special applications for instance in medicine and other.		
Publications/patents, awards, projects: (selected) - Functionalization of 3D chitinous skeletal scaffolds of sponge origin using silver nanoparticles and their antibacterial properties, <i>Marine Drugs</i> , 2020, 18(6), 304. <ul style="list-style-type: none">- Thermal properties of poly(N,N-dimethylaminoethyl methacrylate). <i>PLoS ONE</i>, 2019, 14(6), e0217441- The effect of molecular weight on the antibacterial activity of N,N,N-trimethyl chitosan (TMC), <i>International Journal of Molecular Sciences</i>, 2019, 20(7), 1743,		



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- Development of an electroactive biopolymer-based membrane and characterization of mechanical actuator properties for applications in electromechanical smart products, *International Journal on Interactive Design and Manufacturing*, 2022,
- Highly Strong, Tough, and Stretchable Conductive Hydrogels Based on Silk Sericin-Mediated Multiple Physical Interactions for Flexible Sensors, *ACS Applied Polymer Materials*, 2022, 4(1), pp. 618–626

Keywords:

Biopolymers, copolymers, modifications of the surface layer, bioactive properties, thermal resistance.

List of internship proposal in this research team:

(i) Synthesis of homopolymers and copolymers with special properties, (ii) Thermal analysis of polymers and surface-modified flat products, (iii) Modern barrier materials, (iv) Advanced modifications of chitin and chitosan.