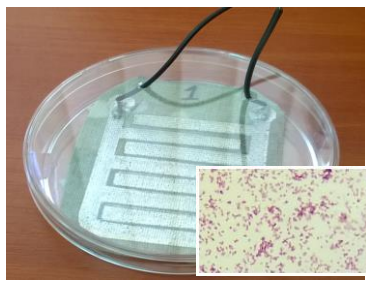
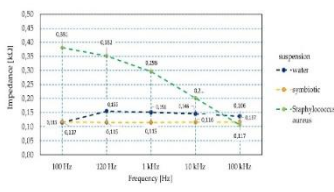





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<p>name of the unit:</p> <p>DEPARTMENT OF MATERIALS ENGINEERING AND MEASURING SYSTEMS</p> <p>Institute of Electrical Engineering Systems, Lodz University of Technology</p>		<p>symbol:</p> <p>I26</p> <p>http://www.matel.p.lodz.pl</p>
<p>head of the unit:</p> <p>Prof. Ryszard Pawlak, PhD, DSc</p>	<p>potential promoters:</p> <p>Ewa Korzeniewska, PhD, DSc, TUL Prof. Ryszard Pawlak, PhD, DSc</p>	<p>contact person:</p> <p>Ewa Korzeniewska, PhD, DSc, TUL tel: 42-631-25-33 ewa.korzeniewska@p.lodz.pl</p>
<p>scope of activities:</p> <p>Our main areas of interest are:</p> <ul style="list-style-type: none"> Technologies for the production of textronic structures with the methods of applying thin layers. Study of electrical and magnetic properties of textronic structures. Study of the influence of environmental factors on the electrical properties of textronic structures. Methods of integrating textronic systems with external electrical circuits. Design, optimization and fabrication of structures for application purposes. Research on the electrical and magnetic properties of thin, transparent conductive layers (TCO) and 2D materials (graphene) deposited on various types of substrates. Application of thin-film systems in cryogenic systems (e.g. sensors, micro heaters, microsystems). 		<p>graphic material</p>  
<p>present activities:</p> <ul style="list-style-type: none"> Research on the possibility of detecting pathogens (including bacteria and fungi) with the use of thin-film sensors made on a composite textile substrate. Design and production of thin-film electrodes used in rehabilitation using the electrostimulation method. Manufacturing and testing of microsystems on polymer and ceramic substrates for local temperature monitoring and control in cryogenic systems. Manufacturing and testing of sensors created from 2D materials. 		
<p>Future activities:</p> <ul style="list-style-type: none"> Integration of thin-film and textronic structures with classical electronics. Manufacturing of organic electronics devices on composite substrates. Investigation of electrical and magnetic properties of organic electronics devices at cryogenic temperatures. 		
<p>Publications/patents, awards, projects:</p> <ul style="list-style-type: none"> Korzeniewska E, Szczęśny A, Lipinski P, Drózd T, Kiełbasa P, Miernik A and Politowski K; Textronics Interdigitate Electrodes for Staphylococcus Aureus bacteria detecting, Journal of Physics: Conf. Series 2021 Volume 1782, 1782 012015 		



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- Korzeniewska, E.; Szczęsny, A.; Lipiński, P.; Drózdź, T.; Kielbasa, P.; Miernik, A. Prototype of a Textronic Sensor Created with a Physical Vacuum Deposition Process for Staphylococcus aureus Detection. *Sensors* 2021, 21, 183. <https://doi.org/10.3390/s21010183>
- Pawłowski S.; Plewako J.; Korzeniewska E. Influence of Structural Defects on the Resistivity and Current Flow Field in Conductive Thin Layers. *Electronics* 2020, 9, 2164. <https://doi.org/10.3390/electronics9122164>
- Korzeniewska E.; Krawczyk A.; Mróz J.; Wyszynska E.; Zawislak R. Applications of Smart Textiles in Post-Stroke Rehabilitation. *Sensors* 2020, 20, 2370. <https://doi.org/10.3390/s20082370>
- Lebioda M., Pawlak R., Rymaszewski J. Joining of electrodes to ultra-thin metallic layers on ceramic substrates in cryogenic sensors, *Sensors* 2021, 21(14), 4919; <https://doi.org/10.3390/s21144919>

Keywords:

wearable electronics, textronics, thin films, physical vacuum deposition, sensors, cryogenics, TCO, graphene

List of internship proposal in this research team:

- Conducting research related to the properties of thin-film textronic structures and the influence of environmental conditions on the parameters of thin layers (theoretical and experimental analysis).
- Production and application of thin-film textronic structures in the field of sensors and organic electronics.
- Testing under cryogenic conditions of microsystems produced on various types of substrates