

Annex No. 4 to the Statutes of the FT TUL

Technical University of Liberec, Faculty of Textile Engineering

THE FOCUS OF THE CREATIVE ACTIVITIES AT THE FACULTY.

- Application of new materials, technologies and methods for designing textile materials with targeted properties for application in clothing and technical textiles.
- Research of textile-technological processes, systems, properties of fiber products, testing methods, analytical and evaluation procedures.
- New principles of non-woven fabric production.
- Organoleptic properties of three-dimensional textile units.
- Improvement of textile units with regard to their quality and ecology.
- Creation, structure and structural mechanics of textiles.
- Research and development in the field of the technology of creating and cultivating textiles, or clothing.
- Structure and structural mechanics of textile units.
- Development of new metrological methods focused on complex problems (responses in time and space, objectification of subjective judgments).
- Ecology of textile products and technological processes.
- Quality management and optimization in the textile and clothing industry.
- Optimization of technological processes and textile, or clothing products.
- Using simulation and system approaches in textiles and clothing.
- Application of the results of artistic creative activity in product innovation.

FT TUL's scientific, research, development and innovation, artistic and other creative activities are based on the FT TUL Strategic Plan and its updates. In particular, such research activities that are in line with the rapidly evolving research trends are supported. The scientific and research work builds in particular on those fields in which the faculty has traditionally been achieving high level results and has a high quality personnel background, and where there is a high probability of obtaining financial support from various grant tenders. The development of FT in the field of research sciences is mainly focused on the following areas:

1. **New materials**

Research, development of using new materials in the field of clothing and technical textiles, development of composite structures containing inorganic fibers, nanoparticles and textile reinforcements, construction and evaluation of smart textiles.

2. **Metrology and new methods of quality evaluation.**

Computer aided modelling of the properties of fibrous and textile structures; development of new methods in textile comfort evaluation; evaluation of quality parameters, textiles comfort and textiles defects.

3. **Advanced textile technologies.**

Modification and development of technologies for the processing of new materials, new energy sources and new transport media in textiles, interdisciplinary use of textiles, use of optical fibers and shape memory



materials for technical products, development in the area of textile sensors and sensors suitable for use in textiles. Environmental aspects of new technologies.

4. Use of nanotechnologies.

Research, development and use of nanotechnologies in textiles, production and use of nanofibres and nanofibrous structures, application of nanoparticles for special effects.

In all these areas, research results are already available and specialists are ready. A number of activities are partly covered by grant projects. Detailed information is provided in the current version of the FT TUL Long Term Plan.