



INSTITUTE OF BIOPOLYMERS AND CHEMICAL FIBRES

INSTYTUT BIOPOLIMERÓW I WŁÓKIEN CHEMICZNYCH

ul. Skłodowskiej-Curie 19/27, 90-570 Łódź, Poland,

e-mail: ibwch@ibwch.lodz.pl , <http://www.ibwch.lodz.pl>,

phone secret. +48 42 6376744, fax secret. +48 42 6376214

phone centr. +48 42 6376510, fax centr.+48 42 6376501



DIRECTIONS OF ACTIVITY

OF THE INSTITUTE OF BIOPOLYMERS AND CHEMICAL FIBRES

Offer For Collaboration

The Institute's research and development activities are of an interdisciplinary character comprising:

BIOPOLYMERS

- Ecological technologies for producing fibers from polysaccharides: filaments and staple fibers and the manufacture of microcrystalline forms
- Functionalization of cellulose products (e.g. non-inflammable, bioactive)
- The technology for producing fibers from vegetable proteins including composites polysaccharide-protein
- Modification and processing of natural polymers into fibers, films and nonwovens
- Nano- and micro-structures based on biopolymers
- New composite polymeric materials with barrier properties for improving the safety and comfort of use
- New raw materials for the production of functional, smart textiles and paper

BIOMATERIALS

- Use of biopolymers for reconstruction of peripheral nerve, for manufacture of biocomposite polymeric materials to be used for treating wounds and bedsores, to seal the vascular prosthesis, to bioactive nanocomposites used in tissue engineering
- Anti-cancer preparations based on natural polymers
- Tissue culture medium from renewable raw materials
- Protein biocomposites for medical, cosmetic and paper applications
- Preparations for plant protection
- Composite nonwoven products for the protection of human health and human safety

BIOTECHNOLOGY

- Bio modification of natural and synthetic polymers
- Biotechnological processes for purification and modification of cellulose pulps
- Technology of nano/micro cellulose fibers from biomass
- Biosynthesis of bacterial cellulose modified with bioactive poly- and oligoaminosaccharides
- Development of methods of biodegradation natural polymers, including waste materials (chitosan, cellulose, starch) for the preparation of oligomeric fraction
- Innovative electroacoustic transducers based on nano-bio-cellulose modified with chitosan
- Biomimetic functionalisation of polymer material
- Biorefinery, application of biomass from vegetable and animal sources

NANOTECHNOLOGY

- Nanomaterials (nanofibres obtained using electrospinning) from biopolymers to tissue culture and surgical implants
- New fibrous forms based on multi component nonwovens or combining layers of nanofibres with other nonwovens, textiles
- Electrospray: nanofibrous modifications of textiles
- Functionalization of polymeric materials with nanoparticles of active substances

PULP & PAPER

- New technologies for producing pulp for manufacture of paper and cardboard, especially from non-wood raw materials
- Chlorine-free (environmentally friendly) method of bleaching pulp
- Unconventional raw materials for pulp manufacture under conditions of wood shortage.
- Use of biomass for the production of pulps which is soluble alkali and production of nanofibres

SYNTHESIS and PROCESSING of THERMOPLASTICS

- Synthesis of biodegradable thermoplastic polymers (aliphatic-aromatic copolyesters, copolyesteramids)
- Wholly aromatic liquid crystal copolyesters for non-inflammable and high-strength products
- Processing thermoplastic polymers, fibers, nonwovens, films including biodegradable and bioactive products
- Composite materials based on non-woven produced using melt-blown, spun-bonded and electrospinning techniques
- Preparation of functional nonwovens for medical application, filtration and nanofiltration
- Advanced high-quality packaging materials
- Modification of thermoplastic polymers i.e. Nanofillings
- Chemical recycling of fiber-forming polymers (the use of PET, PA wastes) for the synthesis of new types of compounds

PAPERMAKING

- Modern technologies of paper production for special purposes with special properties
- Energy management in the process of paper manufacture
- Energy management in of wastepaper processing
- Use of papermaking technology for the production of cellulosic fibers, including special filtration materials
- Composite materials based on renewable raw materials
- Functional paper products using natural raw materials including wastes

ENVIRONMENTAL PROTECTION

- Modern technologies of paper mill wastewater treatment
- Development of methodology for the assessment of air pollution from pulp and paper industry
- Development of techniques to limit emissions of pollution to the atmosphere
- Methodology for monitoring emissions from paper mills
- Waste water management in paper mills
- Development of methods of use and disposal of waste
- Analytical methods for the determination of hazardous substances in the environment and paper products
- Update and evaluation of best available techniques (bat) and reference documents
- The use of raw materials from industrial recycling