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INSTITUTE OF BIOPOLYMERS AND CHEMICAL FIBRES

Team of Synthetic Fibres

The section conducts R&D in melt spinning of synthetic fibres

Main research fields:

- processing of thermoplastic polymers to fibres
 - classical LOY spinning
 - fibres with round and profiled cross-section and hollow fibres
 - special fibres including bioactive and biodegradable fibres
 - technical fibres eg. hollow fibres for gas separation, filling fibres for concrete
 - bicomponent fibres
 - side-to-side (s/s type) self-crimping and self- splitting
 - core/sheath (c/s type)
- processing of thermoplastic polymers to nonwovens, monofilaments, bands and other fibrous materials directly spun from the polymer melt
- assessment of fibre-forming properties of thermoplastic polymers inclusive testing of filterability.

Equipment:

Pilot-scale equipment for conducting investigations in melt spinning of fibres

- spinning frames for
 - continuous fibres 15 – 250 dtex
 - bicomponent continuous fibres 20 – 200 dtex
- drawing frames for continuous filaments 15 – 2000 dtex
- laboratory stand for spun bonded nonwovens, width 30 cm
- laboratory stand for investigation in the field of staple fibres (crimping, cutting line)
- laboratory injection molding machine with a maximum injection volume of 128 cm³
- testing devices (Dynisco LMI 4003 plastometer, Brabender Plasticorder PLE 330 with laboratory film extrusion device)
- monofilament line for 0.3 – 1 mm diameter of the monofilaments.

Implemented technologies (since 2000):

- texturized polyamide fibres modified with amber for the preparation of special antirheumatic products
- polyolefin hollow fibres for gas separation
- bioactive polypropylene POY fibres
- modified polypropylene yarns
- polyolefin fibres from PP/PE waste.



Contact:

INSTITUTE OF BIOPOLYMERS AND CHEMICAL FIBRES
 ul. M. Skłodowskiej-Curie 19/27, 90-570 Łódź, Poland
 Team leader: Krystyna Twarowska-Schmidt, Ph.D., Eng.,
 tel. (+48 42) 638 03 24, e-mail: syntetyk@ibwch.lodz.pl