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INSTITUTE OF BIOPOLYMERS AND CHEMICAL FIBRES

Team of Synthetic Fibres

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

Main research Fields:

- processing of thermoplastic polymers to fibres:
 - classic LOY spinning:
 - fibres of 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 including testing of filterability

Equipment:

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

- spinning frames for:
 - continuous fibres of 15-250 dtex,
 - bicomponent continuous fibres of 20 – 200 dtex)
- drawing frames for continuous filament of 15 – 2000 dtex
- laboratory stand for spun bonded nonwoven 30 cm width
- laboratory stand for investigations 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 monofilaments of 0.3 – 1 mm diameter

Implemented technologies (since 2000):

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

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