

The Institute for Macromolecular Studies (ISMAC) is an internationally recognised centre of polymer science and an institute of the Italian National Research Council (CNR).

The activities of the Biella department deal with research and innovation in polymeric materials and related textile processes, development of textile norms and standards, and services, technological transfers and technical consultancy to textile enterprises. With its highly qualified staff and well equipped chemical, physical and microscopy laboratories, the department of Biella is known for the assistance to the Italian textile industry, which is the EU leader in the garment production.

The competence on the quality control of raw materials, semi-manufactured and finished garments, developed in many years of work in the field of natural and man made fibres, is recognised by Interwoollabs . Furthermore, CNR-ISMAC Biella collaborates with standardisation committees of International Wool Textile Organisation (IWTO) and International Organization for Standardization (ISO).



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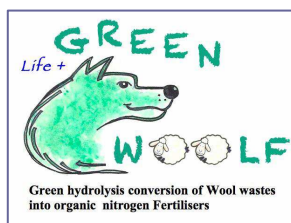
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Research activities

- Antibacterial finishes for textile products;
- Electrospinning for nanofibres production;
- Extraction and processing of wool keratin for filtration and biomedical applications;
- Synthesis and deposition of electroconducting polymers on textiles;
- Textile materials with biodegradability and biocompatibility properties for biomedical applications (tissue engineering, wound dressing, controlled release of drugs);
- Functionalisation of textile materials;
- Enzymatic treatments for textile materials;
- Exploitation of textile industry wastes for agricultural and farming purposes;
- Thermal and physiological comfort evaluation of fabrics and garments;
- Objective measurements of textile handle properties;
- Surface morphology investigation;
- Analysis and labelling of textile materials;
- Development of analytical methods for the quality assessment of fibres and textiles.

National and International research projects



Laboratories and facilities

Physical/Mechanical laboratory

Dynamometer; Optical Fibre Diameter Analyzer; Abrasion and Pilling Tester; FAST – Fabric Assurance by Simple Testing; KES – Kawabata Evaluation System; Explosion resistance; Skin Model; Hydrostatic pressure; Air permeability; Vapotest; Xenotest; Thermal conductivity; Static Voltmeter; Rheometer; Contact angle measuring instrument.

Chemical spectroscopy laboratory

Liquid Chromatography/Electrospray-Mass Spectroscopy (UPLC/ESI-MS); Atomic-Absorption Spectroscopy; Gas Chromatography (GC); Infrared Spectrophotometry (FT-IR); Near-Infrared Spectrophotometry (NIR); Ultraviolet/Visible Spectrophotometry; Differential Scanning Calorimetry (DSC); Thermogravimetric analysis (TGA); Inductively Coupled Plasma-Optical Emission Spectrometry (ICP-OES).

Microscopy laboratory

Light microscopy; Polarized light microscopy; Scanning Electron Microscopy (SEM); Energy Dispersive X-ray (EDX); Atomic Force Microscopy (AFM).

Biology laboratory

Antibacterial test (ASTM E 2149, AATCC Test Method 100); Electrophoresis SDS-PAGE; Keratin extraction and purification; Freeze-dryer.

Laboratorio di Alta Tecnologia Tessile (LATT)

Single and multiple-nozzle electrospinning plants; Wet/melt spinning plant; Low temperature vacuum plasma plant.