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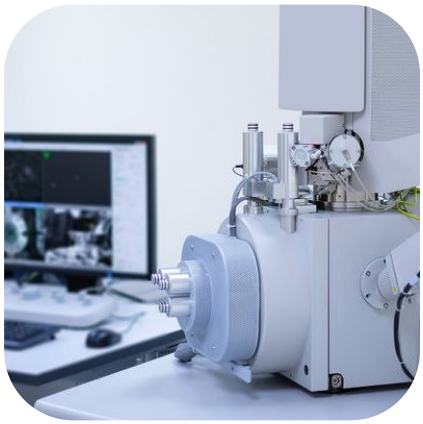
CAPABILITY



Morphological Characterization of Plastic Materials

MICRO- AND NANOSTRUCTURAL ANALYSIS OF PLASTIC MATERIALS

KEY WORDS

MICROSCOPY,

CHARACTERIZATION,

RECYCLED PLASTICS

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DESCRIPTION

The University of Aveiro has advanced capabilities for micro- and nanoscale morphological characterization of plastic materials, including virgin, recycled, composite, and nanocomposite systems. Its infrastructure integrates optical microscopy, scanning electron microscopy (SEM), transmission electron microscopy (TEM), atomic force microscopy (AFM), and 3D optical profilometry, enabling detailed analysis of structure, surface, interfaces, porosity, and defects across multiple length scales.

These capabilities support in-depth studies of morphological behavior and its correlation with mechanical and thermal properties, facilitating R&D activities, innovation, and the development of new formulations. Specialized equipment and staff ensure proper sample preparation, high-resolution imaging, and advanced morphological interpretation. The resulting characterization contributes to the development of more sustainable materials, optimization of recycling processes, and improved quality control, strengthening research and the transition toward a circular plastics economy.

APPLICATIONS

Micro- and nanostructural analysis of virgin, recycled, composite and nanocomposite polymeric materials.
Study of interfaces, porosity, defects and degradation phenomena.
Evaluation of the impact of recycling, reformulation or modification processes of the material.
Correlation between morphology and mechanical and/or thermal properties.
Support for R&D projects and development of new formulations.
Contribution to quality control and validation of materials in industrial or laboratory environments.