

Topic P: Processing and Synthesis

P03: Synthesis, Processing and Properties of Polymeric Materials

Plastics and polymeric materials are widely used since more than a hundred years now. Although today's knowledge on polymers is extensive and a broad scientific expertise exists, a lot of unreleased questions still remain open. The chain along synthesis, additives, compounding, and processing determines short- and long-term behaviour of plastic products. Innovative manufacturing methods (e.g., additive manufacturing) are complementing traditional methods and establish new fields of applications.

Contributions should address research areas for polymeric materials with high technical relevance, such as

- Polymer degradation and deterioration under different loads (e.g., mechanical, thermal, electrical, chemical or environmental stress etc.),
- Lifetime assessment for polymeric materials,
- Relaxation and retardation behavior, time and temperature dependency of properties,
- Multi-stress behavior and interaction of failure mechanisms,
- Failure analysis,
- Analytical methods (e.g., thermal and chemical analysis) and rheology,
- Innovative manufacturing methods, such as additive manufacturing,
- Impact of processing (e.g., injection and compression molding, extrusion etc.) on the properties of polymeric materials,
- Fracture mechanics for polymers and environmental stress cracking,
- Additives and stabilizers,
- Structure and morphology of polymers,
- Boundaries, interface and surface properties of polymers and fillers.

Within that framework, industrial implementation, experimental and theoretical studies as well as approaches by numerical simulation shall be discussed. An exchange of experience with experts from engineering, chemistry, physics, and material science is intended to develop new insights by an interdisciplinary discourse.

Symposium Organizer



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