



Artur Róžański

ASSOCIATE PROFESSOR – CMMS PAS · HEAD OF PHYSICAL PROPERTIES OF CRYSTALLIZING POLYMERS GROUP – CMMS PAS

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Currently held positions

Centre of Molecular and Macromolecular Studies of the Polish Academy of Sciences

Łódź

ASSOCIATE PROFESSOR

Centre of Molecular and Macromolecular Studies of the Polish Academy of Sciences

Łódź

HEAD OF PHYSICAL PROPERTIES OF CRYSTALLIZING POLYMERS GROUP

Scientific profile and collaborations

My scientific work primarily focuses on analyzing the relationship between the micro-/nanostructure of both crystalline and amorphous regions of semicrystalline polymers and their barrier, mechanical, and thermomechanical properties. I also conduct research on the micromechanisms of plastic deformation in polymers, with particular emphasis on the role of the disordered component. I have experience designing new materials from semicrystalline polymers and their micro- and nanocomposites. By modifying their microstructure, I create materials with unique physical properties.

Simultaneously, I am conducting research on new polyesters, polyamides, and polyolefin-mimicking polymers derived from renewable sources. I am also interested in the synthesis and structural analysis of new copolymers based on branched lactones and macrolactones. Additionally, I am exploring effective compatibilizers for immiscible systems such as polypropylene/poly(phenylene oxide), polypropylene/polycarbonate, and polypropylene/polyethylene. These studies are conducted in collaboration with Prof. R. Duchateau's group (University of Groningen, Netherlands) and Prof. L. Jasinska-Walc (SABIC, Netherlands).

Selected publications

- 2025 *Influence of temperature and orientation on the mechanical properties of amorphous regions on the example of polyethylene* [\[link\]](#)
- 2022 *Barrier Properties of Semicrystalline Polylactide: The Role of the Density of the Amorphous Regions* [\[link\]](#)
- 2021 *The Modulus of the Amorphous Phase of Semicrystalline Polymer* [\[link\]](#)

Research grants

Principal Investigator: 3 grants: NCN

Co-Investigator: 12 grants: NCN, MNiSW, POIG, EU

Obtained patents

2 patents: Polish & International

International research stays

Netherlands, Eindhoven, Technical University in Eindhoven, in the team of Prof. Pieter Lemstra

France, Paris, Ecole Nationale Supérieure d'Arts et Métiers, in the team of Prof. Gilles Regnier