



Politechnika Łódzka

SUPERVISOR PROFILE

Professor, PhD, DSc, Eng. Dariusz M. Bieliński

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Website of the research team: <https://dbteam.p.lodz.pl/>

V-ce Dean of the Faculty of Chemistry for development, responsible for research and cooperation with industry. Deputy Director of the Institute of Polymer and Dye Technology. Deputy Head of the Scientific Discipline Chemical Sciences at the University, Member of the Scientific Council of the Interdisciplinary Doctoral School of TUL, Head of the Scientific Council of the Institute of Security Technologies MORATEX, Member of the Senate of TUL, The Materials Engineering and Metallurgy Committee of the Polish Academy of Sciences - Section of Nonmetallic Materials, The Polish Tribology Society and The Polish Chemical Society.

RESEARCH INTERESTS

Polymer/rubber technology and engineering, Polymer composites/nanocomposites, Functional/smart polymeric materials, Recycling of rubber and waste management, Biocomponents and valorized wastes as components for polymer/rubber composites, Surface engineering and modification/treatment, Tribology. All aspects of rubber compounding, processing, and exploitation, including modification, post-treatment, and structure-properties relationship. His work is used as innovative solutions in the manufacturing of functional polymer/rubber materials/composites tailored for automotive, medicine, aviation, space, and civil engineering.

*Co-author of **148** publications (h -factor=**20**; **1400+** citations), **28** patents, Head or Principal Investigator/team member of **31/40+** R&D projects. Cooperation with Polish and foreign science centres in The Netherlands, Germany, France, Finland, and Brazil. Promoter of **14 doctoral dissertations**.*

Professor Bieliński has gained industrial experience as a Research Director of The Rubber Research Institute STOMIL further continuing as The Elastomers and Rubber Branch of The Institute of Engineering of Polymer Materials and Dyes (2007-2014), post-docs in France and UK, and visiting professorships in UK, Qatar France and Brasil. PhD-University of Strathclyde (UK).

CANDIDATE PROFILE

DISCIPLINE – Chemical Sciences, Materials Engineering or Chemical Engineering

Familiar with rubber chemistry, technology or engineering, experience in laboratory work welcome, well documented research activity (projects and publications in indexed journals of the scientific field).

POSSIBLE RESEARCH PROJECTS

1. Modification of silica filler surface with selected natural compounds in order either to improve its dispersibility in rubber matrix and enhance polymer-filler interactions or to support curing or improving aging resistance of rubber.
2. Low temperature sulfur vulcanization of rubber realized either with polysulfidies or/and fluorine-amine initiators. Synthesis of polysulfides able to effective curing of rubber without surface blooming.
3. Hybrid flame retardancy of elastomers using ceramization and/or IR radiation reflection. Influence of fluxing agent and filler/dye system on ceramization ability and flammability of elastomers.
4. Elastomers for low temperature applications. Silicone-butadiene rubber blends and their compatibilization. Synthesis of silicone-urea copolymers and low temperature elastomer composites on their basis.
5. Any ideas/proposals considering e.g. rubber recycling or management/valorization of rubber waste, as well as functional/smart or bio-elastomer composites are welcome.

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HR EXCELLENCE IN RESEARCH