Anna **Kowalewska**

Professor – CMMS PAS · Leader of Hybrid Materials Physicochemistry Research Group – CMMS PAS

anna.kowalewska@cbmm.lodz.pl | www.cbmm.lodz.pl/pracownicy/anna-kowalewska |

www.cbmm.lodz.pl/jednostki/zespol-fizykochemii-materialow-hybrydowych | 0000-0002-3197-8015 |

Scopus bibliometric data: citations **967** · documents **75** · h-index **19**

Currently held positions

Department of Polymeric Nano-materials, Centre of Molecular and Macromolecular Studies of the Polish Academy of Sciences *Łódź*

Professor

Hybrid Materials Physicochemistry Research Group, Centre of Molecular and Macromolecular Studies of the Polish Academy of Sciences *Łódź*

Leader

Scientific profile and collaborations

My research focuses on materials chemistry, with particular emphasis on the physicochemical properties and applications of organosilicon polymers and hybrid materials.

I have **extensive experience** in research on **polysilsesquioxane materials**. My research focuses on **ladder-like** polysiloxanes and their polyhedral analogues (**POSS**) and on investigating methods for their synthesis and modification.

I am actively involved in the design of well-defined functionalized **thin films and coatings** (hydrophobic and hydrophilic), studies on their **structure** and **surface properties**, and the development of new organosilicon materials and coatings with **antibacterial** and **anti-biofilm** properties. This research was partly conducted in collaboration with the Lodz University of Technology. Currently, I am focusing on hybrid coatings with advanced antibacterial properties for **surface modification** in atmospheric **water harvesting** systems. My research bridges **chemistry** and **microbiology** within an interdisciplinary approach, aiming both to expand **fundamental knowledge** and to develop innovative hybrid materials. In addition to my work on surface modification, I am also interested in **supramolecular interactions** in organosilicon materials and explaining the influence of **interfacial interactions** on the morphology and properties of the resulting **ordered systems**.

Selected publications

2023 ***Hybrid Bio-Based Silicone Coatings with Anti-adhesive Properties*** **[link]**

2022 ***Spontaneous formation of hierarchical structures in some polylactide/polysilsesquioxane blends*** **[link]**

2020 ***Crystallization, structure and properties of polylactide/ladder poly(silsesquioxane) blends*** **[link]**

Research grants

Principal Investigator: 4 grants: KBN, NCN

Scientific Advisor: 1 grant: NCN

Obtained patents

6 patents given by Polish Patent Office

2 patents given by US Patent Office

International research stays

France, Laboratoire de Recherche sur les Polymères CNRS – Université PARIS XII, Dr. Sylvie Boileau

UK, University of Sussex, United Kingdom, Prof. Colin Eaborn