

Professional Biography

Paweł Piotr Michałowski leads the Characterization of Materials and Devices Group at the Łukasiewicz Research Network - Institute of Microelectronics and Photonics in Poland. He has worked with secondary ion mass spectrometry (SIMS) for nearly 20 years, gaining experience with ToF-SIMS and quadrupole SIMS, but spending most of his career with the magnetic-sector CAMECA IMS SC Ultra. His research focuses on developing dedicated measurement procedures tailored to specific samples, demonstrating how adapting measurement conditions can extend the analytical capabilities of SIMS.

He has demonstrated the effectiveness of this approach across a wide variety of samples, achieving atomic layer depth resolution in 2D materials such as graphene, transition metal dichalcogenides, and MXenes, as well as in selected crystalline semiconductors with well-defined atomic layers. One particularly notable example is his original in situ ion polishing procedure, which suppresses the formation and propagation of sputter crater roughness, allowing atomic layer resolution to be maintained during profiling of more than 12.5 µm of InP. His measurements span eight orders of magnitude, from individual atomic layers approximately 0.3 nm thick to a 3 cm depth profile of a hydrogen storage membrane.

His work also extends beyond conventional planar samples to complex geometries, including nanowires and quantum dots, as well as real semiconductor devices, such as VCSELs extracted directly from commercial computer mice.

He has authored or coauthored over 100 scientific papers and serves as an Associate Editor of Microelectronics Engineering, alongside his regular peer

review activities. He also edited the book Secondary Ion Mass Spectrometry: Fundamentals, Advancements and Applications, published by the Royal Society of Chemistry in 2025, which brings together contributions from 27 internationally recognized SIMS specialists. He actively contributes to the SIMS community through webinars and seminars delivered worldwide.