

Successful conclusion of the 8th International Conference “ALD FOR INDUSTRY” in Dresden

Dresden, March 12, 2025 - The 8th International Conference “ALD FOR INDUSTRY” has once again bridged the gap between basic research, industrialization and commercialization of atomic layer deposition (ALD). This event, which has been held annually in Dresden since 2017, once again welcomed over 100 participants from 14 countries and numerous exhibitors this year despite the strike at German airports.

ALD technology, a process for the deposition of thin-film materials from the gas phase, is no longer just a key component in microelectronics. Its applications extend across numerous branches of industry such as lithium-ion batteries, photovoltaics, optics, lighting, biomedicine and quantum technology.

This year's conference offered a **diverse program**, including tutorials on the basics of ALD technology, insights into the latest advances in the field and numerous opportunities to network with representatives from academia and industry. The accompanying exhibition provided a platform for companies to increase their visibility and showcase their products and services to an international audience.

One of **this year's highlights** was the presentation by Jan Willem Maes, Senior Technologist at ASM in Belgium, who gave an impressive overview of developments in ALD technology in industrial practice and an interesting outlook on future challenges and technological approaches in the coming years.

In microelectronics, **developments are moving into the third dimension** and electronic components are no longer just made up of complex 2D circuits. Connection technologies must now also be implemented in the z-axis, resulting in new requirements for manufacturing processes. Electronic architectures need to be rethought. Some of the sought-after solutions have already been successfully implemented using ALD technologies. Others are still under development. For example, additional layers and connections must be placed on existing structures, which significantly narrows the process window of the subsequent steps. Milder process conditions are becoming a necessity in order not to damage existing components.

Dielectric coatings were discussed in a variety of ways. From the underlying precursors and the process-specific influences on the layer structures to the optimization of the properties, there were some interesting contributions that highlighted the corresponding processes and new developments. Here too, more complex cycles are required in the process sequences. A new variant of surface-sensitive deposition using pre-treatment and inhibition steps was presented.



The second day was dedicated to **energy technology applications** for batteries, electrolysis, fuel and solar cells as well as applications from the field of optics. The company SparkNano, for example, is involved in scaling up manufacturing processes for PEM electrolysis membranes to produce green hydrogen. Here, large quantities of rare iridium are used as a catalyst. By using efficient catalytic thin films, future membranes can be produced much more efficiently and cost-effectively. For this purpose, catalytic layers are produced and stabilized using ALD. The accessibility of the surfaces to be coated and the homogeneity of the layers produced with optimum catalyst loading are a major challenge, as Paul Poodt reported in his presentation.

Wojciech Gajewski from Trumpf Hüttinger compared various **plasma-based processes** in his presentation and pointed out the resulting differences in the ALD layers produced, which can be generated by using different plasma sources and process parameters during the manufacturing process.

Suo Li from Afly Solution Oy presented the developments of recent years in the field of **optical functional layers for consumer electronics** and amazed some users of smartphones and cameras with technical details that are already used in today's devices in the high-price segment and will be standard in the future.

Those who were unable to secure one of the coveted presentation slots had the opportunity to present their work in the poster session. A wide range of development results were also presented here.

ALD FOR INDUSTRY" has established itself as an indispensable meeting place for experts and players in the industry. We are already looking forward to the next edition and to further advancing the development of this pioneering technology.



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