

# Picosun's ALD yttria eliminates corrosion in demanding applications

**ESPOO, Finland, 25<sup>th</sup> February 2019** – Picosun Group, a leading supplier of ALD (Atomic Layer Deposition) thin film coating solutions for global industries, has developed an excellent quality ALD yttria process for corrosion protection in harsh environments.

Yttria, aka yttrium oxide,  $Y_2O_3$ , is extremely hard, dense, and mechanically strong material which has excellent chemical and erosion resistance and very high melting point. These characteristics make it ideal for protective coatings in applications where operating conditions are extreme. Some examples of these applications are various semiconductor production equipment and metal production.  $Y_2O_3$  also finds uses as a high- $k$  gate dielectric in novel microelectronics such as carbon-based components, thin film transistors, and germanium-metal-oxide semiconductors.

Yttrium oxide coatings are typically produced with physical vapor deposition, electron beam evaporation, or sputtering methods, but ALD offers several advantages over these techniques. ALD-manufactured yttria films are intrinsically pinhole-free, extremely dense, ultra-thin, and highly uniform, and they cover conformally even the smallest nanoscale details, voids, crooks, and steps on the surface. Achieving these properties with a fraction of film thickness compared to traditional methods saves costs and materials. As the ALD process is based on spontaneous surface chemical reactions between gaseous reactants, it is gentle to the coated surface and can be applied at moderate temperatures, if needed. Cost-efficient, high throughput production of yttrium oxide coatings can be realized in Picosun's industry-proven **PICOSUN™ P-1000** and **P-300B** ALD equipment (\*).

“Our high volume production ALD machinery such as **PICOSUN™ P-1000** and **P-300B** reactors has been a huge success since their launch. With this equipment we have been able to take ALD to totally new application areas in e.g. surface protection and functionalization of various mechanical components, anti-tarnish and decorative coatings for coins and watch parts, and production of biocompatible coatings for medical devices. Now, our superb quality yttria process, upscaled to production in our high volume reactors, enables revolutionary ALD solutions in industries where durable and reliable surface protection against extreme conditions is needed,” states Dr. Jani Kivioja, CTO of the Picosun Group.

*Picosun provides the most advanced ALD thin film coating technology to enable the industrial leap into the future, with turn-key production solutions and unmatched expertise in the field. Today, PICOSUN™ ALD equipment are in daily manufacturing use in numerous major industries around the world. Picosun is based in Finland, with subsidiaries in Europe, North America, Singapore, Taiwan, China, and Japan, and a world-wide sales and support network. Visit [www.picosun.com](http://www.picosun.com).*

(\*) For more detailed process data and quotations, please contact [sales@picosun.com](mailto:sales@picosun.com)!

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