

InRedox Adds Anodic Titanium Oxide TiO₂ Nanotube Substrates to Nanofabrication Toolbox Product Line

In the 17 years since their discovery, Anodic Titanium Oxide (ATO) TiO₂ nanotube structures have become among the most studied materials in all of science. InRedox announces the launch of ATO substrates as a standard low cost consumable product, enabling scientists to apply and study this remarkable material without having to produce it themselves.

“InRedox is excited to offer anodic TiO₂ nanotube substrates to complement our Anodic Aluminum Oxide (AAO) based products.” Dr. Dmitri Routkevitch, InRedox CTO and co-founder noted. “Researchers in a wide variety of disciplines continue to find novel ways to incorporate nanostructured metal oxides into their investigations. Both AAO and ATO feature parallel arrays of pores (or tubes) and are suitable for many different experiments and applications including templated deposition, catalysis, and cell culturing. However, being a semiconductor, the TiO₂ nanostructures feature different chemical and optical properties from alumina, which is an insulator. Notable examples of research topics of interest for ATO in recent years include its application as a photocatalyst for energy conversion, and continued exploration of the unique UV induced super hydrophilicity phenomenon associated with TiO₂.”

InRedox’s initial ATO offering available now includes ATO films on Ti foil, with tube length from 100nm to 20µm and tube diameter from 15nm to 500nm. Additional form factors, such as ATO films on different substrates and free-standing ATO wafers will be launched in the coming months and custom requests are always welcome.

Dr. Michael Stowell, InRedox co-founder and Associate Professor of Molecular, Cellular, and Developmental Biology and Mechanical Engineering at the University of Colorado Boulder, commented: “The interaction between nanostructured materials, biomolecules, and living cells is one of the most exciting frontiers in science today. The current state of the scientific literature makes it clear that: 1) nano-scale topography influences many of a cell’s crucial functions, and 2) our understanding of the impacts and mechanisms is still in its infancy. With InRedox’s launch of ATO substrates, researchers will no longer need ‘homebrew’ their own materials and can focus on the intricacies of the biological investigations. Traditional planar substrates used for *in-vitro* cell culturing do not adequately replicate the *in-vivo* environment of multi-dimensional living systems. The ability to fine tune the diameter and length of ATO nanotubes enables experiments that investigate the impact of changing a single spatial variable at a time. Such spatial control has been difficult or impossible for life science researchers to achieve. Additionally, because of titanium’s importance in the implantable medical device industry, we anticipate many researchers performing bio-compatibility studies will now be able to screen wider sets of structures and cell lines by ordering ATO substrates as a consumable lab supply rather than having to make them on their own for each study.”

InRedox manufactures wafers, membranes, thin films, and nanotemplates from self-organized nanoporous Anodic Aluminum Oxide (AAO) and Anodic Titanium Oxide (ATO) - Nature's nanoscale honeycombs. Our PITTCON exhibit will feature The NanoFabrication Toolbox - a comprehensive selection of AAO and ATO materials and accessories designed to facilitate R&D and to shorten the "Discovery to Publication to Application" cycle, and The NanoSeparation Toolbox—precisely tailored monodisperse ceramic membranes and membrane modules for liquid and gas-phase filtration and separation application at 1 to 100 nm lengthscale. Let InRedox nanostructured materials give you a head start on your research.

InRedox’s full product line is available for shipment now and is accompanied by in depth technical support to help you reach your goals, see www.inredox.com for ordering information.