

Thinking Outside the Shop



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Let's face it, anodizing is a tough business. The anodized finish on aluminum products from custom jewelry to the most complex automotive component is often viewed as a commodity. Driven by our daily business and all of its challenges, it is easy to forget that the product we provide is the result of a scientific process that required at one point in time the engineering and technical expertise to put it in place. Here we are, in the twenty-first century, in some cases running the same process that our grandfathers ran in 1935 and most of us offering a "me too" finish.

But that does not have to be the case. In these days where nanotechnology is the buzz word, we have all along,

perhaps unknowingly, been providing just what is hip today. Anodizing is a simple but elegant process that yields, with its highly-ordered, self-assembled structure, possibly the most reliable

and easy to produce nano-finish. It is corrosion and wear resistant. It is decorative. It is an excellent base for a variety of subsequent seals and finishes that could not function alone. In short, it is a wonderful work horse that has not received the appreciation it deserves.

If success is based upon awareness - learning about the potential and possibilities for process modifications and improvements, advancements in existing markets - new applications and new markets are clearly our responsibility if we wish to succeed beyond where we are today. Anodizing is not at the end of its development. Understanding the process is the key to understanding how it can be improved. Exploring these potentials opens doors to technologies, industries and markets that we have yet to consider.

Because anodizing is an easy to use process that yields a nanoscale finish, there are many researchers and academics that are working with the finish for nanotechnological applications. The finish is being used as a template for nano-wires and nano-dots for new high density storage computer applications. Anodic oxide finishes are being used as nano-filters, nano-sensors and as nano-indenters for high-definition pattern recognition systems. Nano-tubes of accurate and precise size and dimension are reliably produced using the anodic oxide as a template. The surprising aspect of much of this research is that although the applications are high tech, the anodizing process that is the critical part for the research is often not really understood. In fact, in one technical journal, the anodic oxide finish was referred to as a deposit!

Aluminum is a wonderful metal. It is light in weight, easy to alloy and deform, electrically and thermally conductive, and easy to recycle. With continued work in alloy development and manufacturing processes, aluminum has a great future with many industrial applications. As long as aluminum products are around, the need will be there for aluminum finishing. Continuing anodizing development, improving the finish and the process, will strengthen our position with respect to substitution competition and will widen the market for anodizing. Specialty anodizing processes will keep new and innovative applications on this shore, and while it may resemble the anodizing your grandfather did, it will be different, better and also, high tech.

How to do this? Use your search engines - the computer is your best tool to find out who, what, how, where and why there are new research and applications for the anodic oxide. Contact your local universities and technical colleges - Materials and Metallurgical Engineering Departments, Chemistry, Electrochemistry and Physics Departments worldwide are exploring nanotechnology. Suggest using the anodic oxide for what it is - the most elegant, highly-ordered, self-assembling nanostructure. Start a research program to solve a problem or satisfy your curiosity. Support a student or two. And last but not least, attend conferences, symposiums and workshop. Communicate and get inspired.



This is what our industry needs to move forward, to stimulate interest and increase our image and position in the market. Industrial growth depends on cultivating innovative spirit and young interest. We need a grass roots approach, coming from many metal finishers. It is up to us, and we can do it. As far as nanotechnology goes, anodizers were first. Let's use this awareness to advance ourselves toward new success. P&SF