



chemical etching for optical applications

achieve small sizes, excellent corrosion resistance, precision tolerances, mechanical strength properties and material biocompatibility as well as short lead times, burr-free components and precision at a micro-scale

innovators in chemical etching since 1970

tecan[®]

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Chemical etching helps meet the challenges facing the optical industry where there is an ongoing demand for small sizes, excellent corrosion resistance, precision tolerances, mechanical strength properties, as well as material biocompatibility. It helps to deliver short lead times, burr-free components and precision at a micro-scale.

Using it, we achieve an extremely high level of accuracy, creating fine apertures with no burrs. From prototype to high volume and working with measurements from 5 microns to 1mm, we provide bespoke-designed components with finishes appropriate for use with optical applications such as reflection-reducing blackening.

typical optical products manufactured using chemical etching

The chemical etching process is ideal for creating the intricate parts involved in optical equipment such as actuators and encoder discs – key for motion control, positioning, sensors, or measurement – which rely on accurate finishes due to the number and fineness of slots they are made up of.

optical encoders

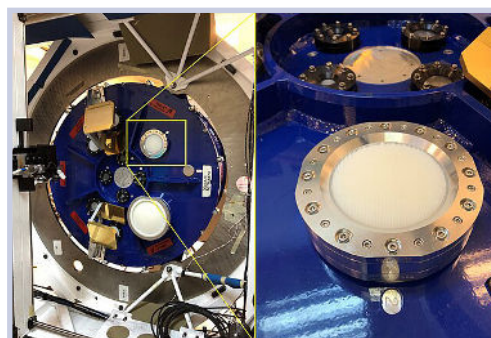
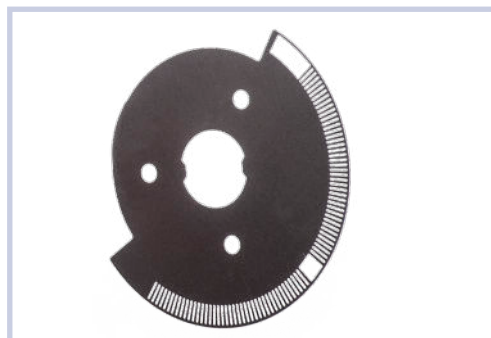
Used in a wide range of applications for measuring and controlling linear or rotary motion, encoders are versatile position measurement devices converting an angular displacement directly into a digital form.

actuators

Types of transducers, actuators convert an input signal into mechanical energy to produce controlled force, torque, or displacement. In the optical industry, they can be found in MEMS scanners for dynamic light modulation and Spatial Light Modulators for spatially varying modulation on a beam of light.

embossing tools for lens arrays

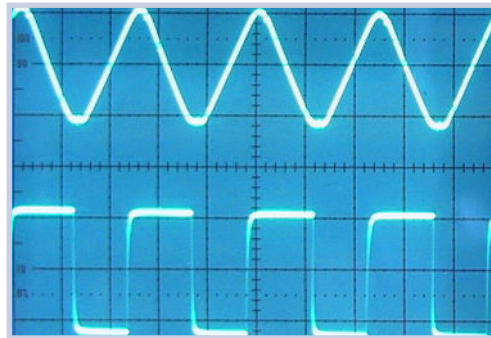
Microlens arrays are one- or two- dimensional patterns of microlenses (lenslets) most frequently in an arrangement of squares or hexagons. Here, the lens pitch is measured in micrometers as fine as tens of micrometers or even less.



graticules and reticles

These fine lines or markings built into the eyepiece of an optical device provide measurement references during visual inspections. Although patterns vary (concentric circles, dots, chevrons and more), the most fundamental type is the crosshair.

You can find graticules and reticles in instruments such as: telescopic sights, spotting scopes, theodolites, optical microscopes, screen of an oscilloscopes, oscilloscope displays, astronomic telescopes, microscopes, surveying instruments.



deposition masks (shadow masks or stencils)

These are precision micromachined sheets used to deposit material onto a substrate. They are used in a wide range of processes to manufacture semiconductor and micro-engineered electronic components. Increasingly, shadow masks are being used in the flat panel LED market to deposit inks and other materials onto substrates during the manufacturing process of flat panel LED and OLED displays.



Tecan's expertise, combined with our micro-precision manufacturing process, enables us to produce parts and components with superior slot smoothness and edge definition for a wide variety of micro-optical applications including those mentioned here.

about Tecan

Established to serve the growing demand for fine-featured, flat profile precision metal parts, Tecan works with cutting edge organisations to co-develop innovative products and bring them quickly to market. Operating from a purpose-built facility, Tecan's capability also includes precision component forming and high-quality metal finishing.

Tecan pioneered the use of photo chemical machining (etching) – an innovative, photolithography-based process that was developed as an off-shoot from the manufacture of printed circuit boards. We also use this expertise in conjunction with other precision manufacturing processes to develop and produce bespoke solutions across a variety of metals which not only deliver critical features that a single process cannot achieve in isolation, but also maximise cost effectiveness and technical capabilities.

Part of the global Muon organisation, which sits within the Health & Science Technologies division of IDEX Corporation, Tecan has seen significant investment in plant and technology over the past few years – strengthening its position as one of the World's leading precision etching experts.