Our unique electrochemical micromachining process offers high precision surface engraving on complex metallic shapes. In short it allows the transfer of classical clean room, silicon based, techniques directly to your metallic substrate.

**MICROPAT CURRENT ACTIVITIES**
- Surface patterning for biomedical implants
- Microfluidics for medical diagnostic devices
- Mold pieces for polymer replication
- Calibrated surfaces for scientific applications
- Marking & decoration for the watch industry

**SERVICES**
- Prototyping
- Small series production
- Consulting
- Technology transfer

**MICROFLUIDIC REALIZATION EXAMPLES**
- Microfluidic circuit on stainless steel
- 60 µm wide 25 µm deep channel
- High density channel array
- Bonded Ti channel (150 µm wide)
- Extremely smooth junctions

**BENEFITS FOR MICROFLUIDIC APPLICATIONS**
- Integrates with mechanical machining to produce a finished product or a mould part.
- Highly flexible process; from CAD design file to engraving on your product.
- Compatible with nickel electroforming for the creation of a replication master.
- Combines with diffusion bonding for high pressure titanium vessels.

**TECHNOLOGICAL FEATURES**
- Applicable on various metals: Titanium, NiTi, CoCr, Stainless Steel and a various tool Steels.
- Excellent surface finish (Ra<25 nm).
- Engraving over large areas (15x15 cm²) with µm accuracy and dimensional control.
- Typical width of grooves and cavities between 20 and 300 µm.
- Etch profiles ranging from flat bottom to hemicircular.

*Evolution of the profile shape during dissolution*
**MODEL SURFACES FOR SCIENTIFIC APPLICATIONS**

- Replication master in stainless steel for bio assays
- Standards for topography measurements
- Textured surfaces for wettability and tribology tests
- Surfaces for optical applications
- Engraving of machine axes to create aerodynamic bearings
- Sinusoidal surfaces for verification of computational models

**MODEL SURFACES REALIZATION EXAMPLES**

- 60 µm Ti hemispherical cavities array
- 30 µm Ti intersecting channels
- 2D sinusoidal stainless steel surface (period 100 µm, amplitude 12.5 µm)
- 3D sinusoidal stainless steel surface (period 100 µm, amplitude 10 µm)

**MICROPAT MISSIONS**

- Propose an extremely accurate micromachining service compatible with complex metallic shapes.
- Promote the use of microstructured metallic surfaces for biomedical and scientific applications.

**STRENGTHS**

- A unique micromachining method
- Job shop service for prototyping and low volumes
- Expert knowledge in titanium & steel electrochemical treatments
- A network of partners for technology transfer and industrialization

**CONTACT**

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