Plasma Electrolytic Oxidation (PEO)

An electrochemical treatment on metals

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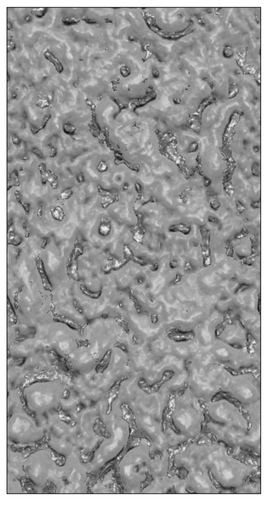
PEO coating

A robust and adherent metal-oxide ceramic coating on metallic substrates with unique microstructure

PEO coating properties and applications

PEO coating properties

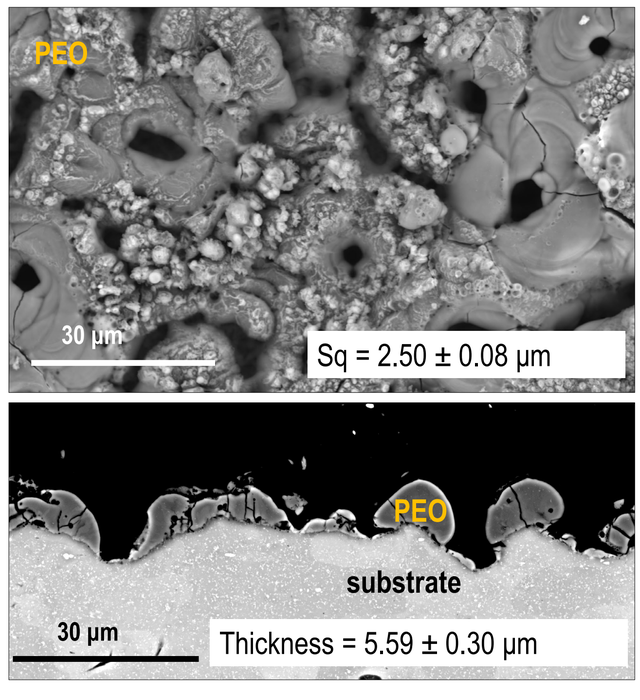
- Highly Crystalline Structure
- Exceptional Hardness
- Dual Sublayers:
  - Inner Dense Layer
  - Outer Porous Layer
- Large Reactive Surface Area



PEO coating applications

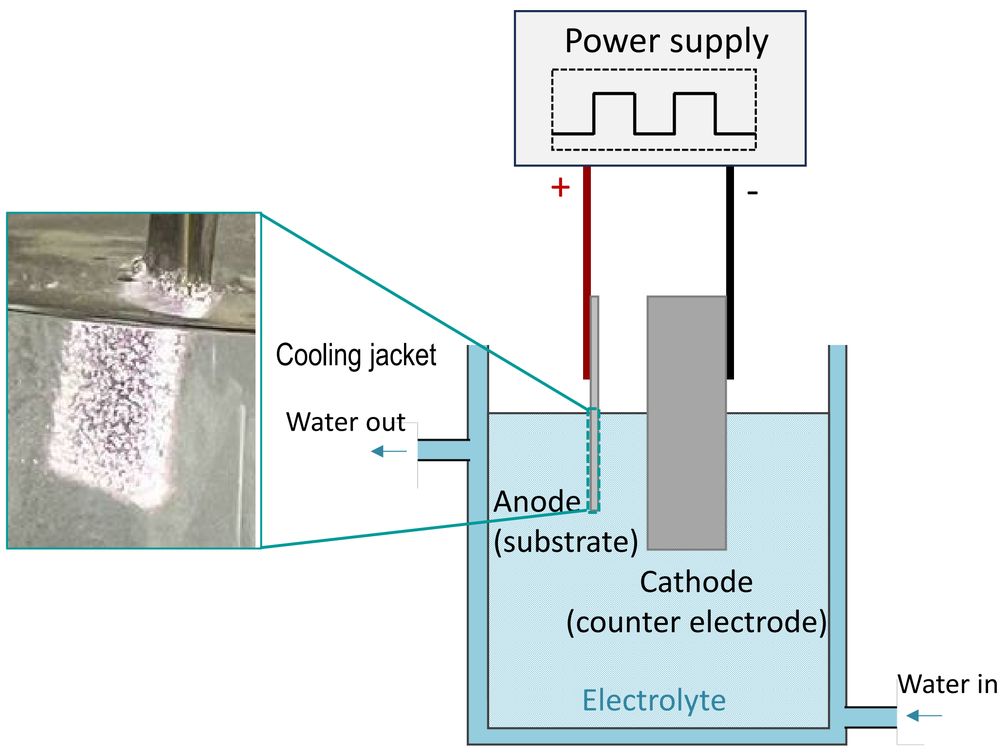
- Metal-Polymer Bonding
- Corrosion Protection
- Biomedical Applications
- Catalyst Support

Surface and cross-sectional morphology of a typical PEO coating on AlMg3 in an alkaline electrolyte

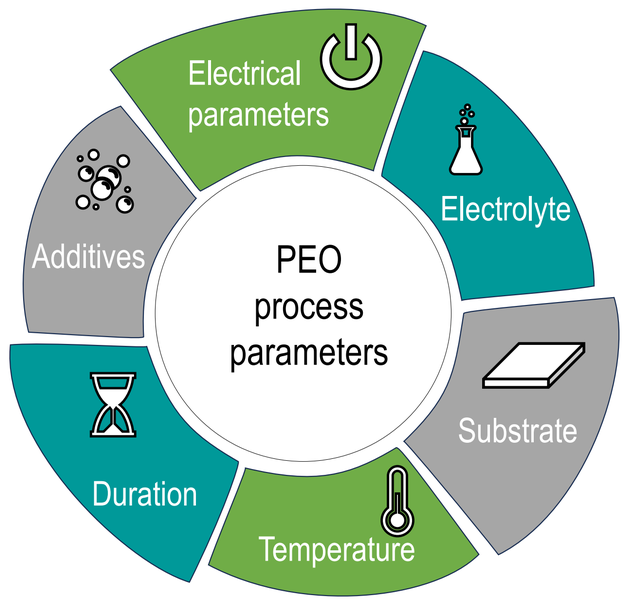


Working principle

- Applying high current density/voltage to an immersed substrate in an alkaline electrolyte
- Generation of micro-discharges on the surface
- PEO coating formation with controllable surface properties and morphology



Schematic of PEO setup



PEO process parameters affecting PEO coating properties

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