



# Plasma Electrolytic Oxidation of Magnesium for Biomedical Applications

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## Objective:

Magnesium alloys have been considered as promising biomaterials due to their excellent biocompatibility. However, their biomedical application is still very limited because of their poor corrosion performance in the physiological environment. In order to solve this problem, plasma electrolytic oxidation (PEO) technique is utilised to produce biodegradable magnesium alloys with acceptable corrosion rate.

## Prospectives:

**Biomedical industries** that focused on development of novel implants, bone fixture, for example, will be interested in this research.

**Government** can also benefit from this research considering the budget reduction in health service.

**Patients** morbidity can be reduced by this research in the future.

The prospective benefits this project can bring about lies in:

- Improving patient life quality
- Reduction in health service cost

## Methodologies:

- Surface & cross-section morphology are observed by SEM
- Phase composition identified using XRD
- *In vitro* corrosion test
- Cell culture test to screen the cytotoxicity property
- Corrosion fatigue tests are carried out to evaluate the mechanical integrity of the coated sample.

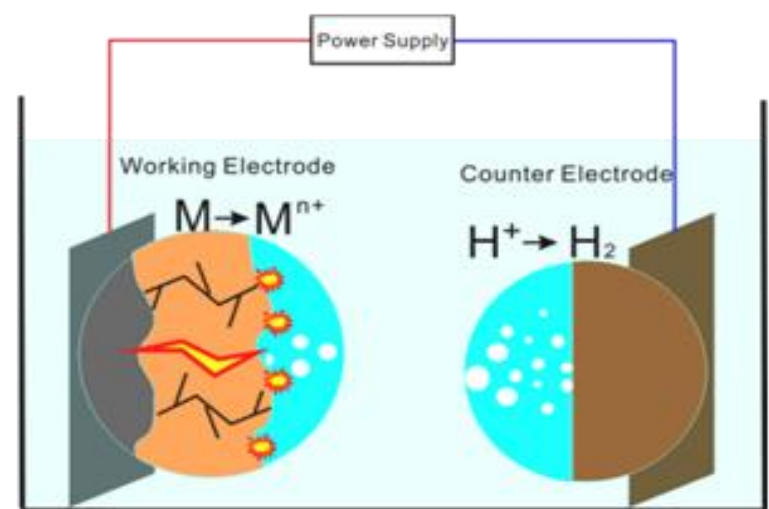


Figure 1. Schematic illustration of PEO process

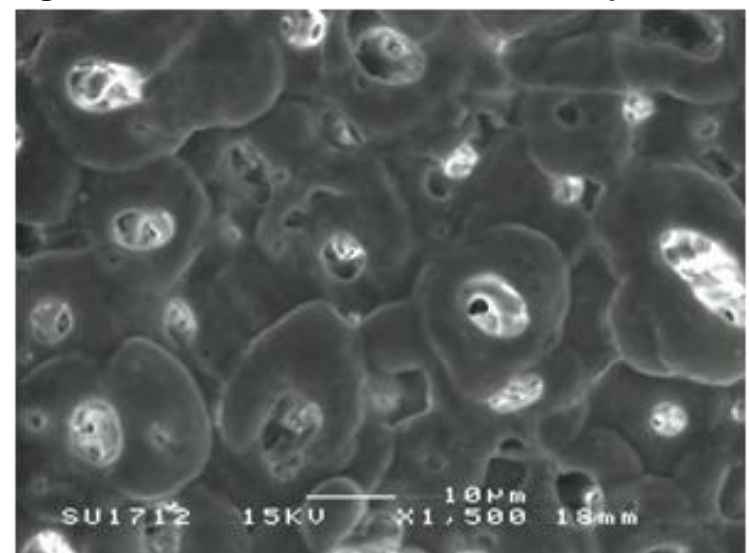


Figure 2. Typical porous morphology of PEO coating

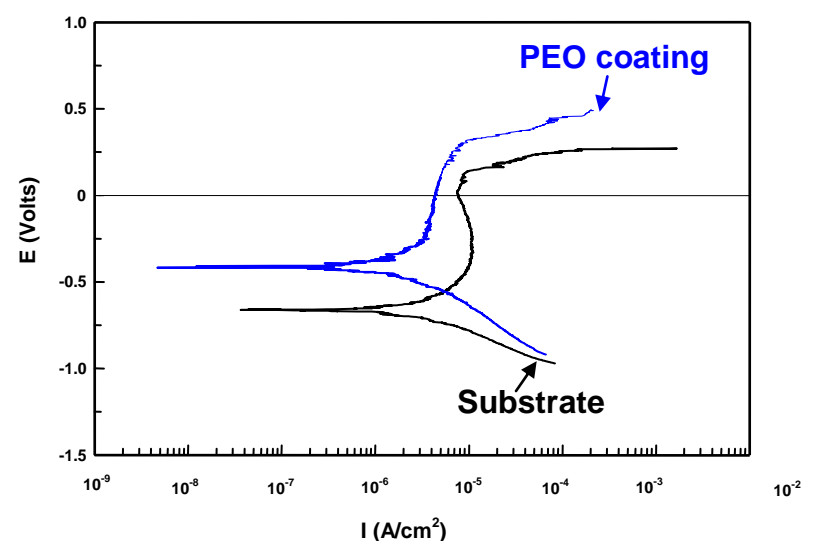


Figure 3. Corrosion resistance of magnesium in SBF improved by PEO coating



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