

Laboratory of Applied Electrochemistry



Current research works

- Electroless Ni-P coating on carbon fibers and fabrics for fabrication of 3-D textiles as precursors of reinforced MMC composites with aluminium matrix
- Electroless Ni-P and Cu coatings on high-dispersion, difficult to deposit substrates: nanopowders of oxides, diamant and carbon nano-tubes (CNT) for fabrication of composite materials with new physico-chemical properties
- Electroless Sn and Ag coatings as protection materials for printed circuit board surfaces
- Enhancement of the transport of penetrating corrosion inhibitors in concrete by means of impressed electric field
- Corrosion phenomena in Ni-P alloys – effect of structure
- Corrosion and catalytic properties of iron group metal-tungsten electrodeposited alloys.

Selected publications

- A.Królikowski, J.Kuziak, *Impedance study on calcium nitrite as a penetrating corrosion inhibitor for steel in concrete*, *Electrochimica Acta*, in press (2011)
- J.Bieliński, A.Sałacińska, R.Kozera, A.Bielińska, A.Boczowska, K.J.Kurzydłowski, *Catalytic activation of carbon fibres in electroless process of fabrication of metallized carbon fabrics*, *Kompozyty-Composites* 11(2), 174-179 (2011)
- A.Królikowski, E.Płońska, A.Ostrowski, M.Donten, Z.Stojek, *Effects of compositional and morphological features on corrosion behavior of nickel-tungsten alloys*, *J. Solid. State Electrochem.*, 13, 263-275 (2009)
- B.Elsener, D.Atzei, A.Królikowski, A.Rossi, *Effect of phosphorus concentration on the electronic structure of nanocrystalline electrodeposited Ni-P alloys: XPS and XAES investigations*, *Surface and Interface Analysis*, 40, 919-926 (2008)
- A.Królikowski, J.Kuziak, P.Stęślik, S.Kuś, *Comparative tests on penetrating corrosion inhibitors for steel in reinforced concrete structures*, *Physico-Chemical Mechanics of Materials, Special Issue* 7(2), 527-532, (2008)
- J.Michalski, T.Wejrzanowski, S.Gierlotka, J.Bielinski, K.Konopka, T.Kosmac and K.J.Kurzydłowski, *The preparation and structural characterization of Al₂O₃/Ni-P composites with an interpenetrating network*, *J. European Ceramic Soc.*, 27(2-3), 831-836, (2007)

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Research profile

Electrodeposition and electroless deposition of metals and alloys

Mechanisms of electroless deposition
Electrodeposition of Ni-base alloys
Electroless deposition onto carbon fibers and nanotubes, oxide and diamant nanopowders,
Deposition of composite coatings
Electroless deposition of metals for printed circuit board structures

Development of curative techniques for corroding reinforced concrete

Corrosion behavior of amorphous, nanocrystalline and composite coatings

Effect of structural features on corrosion processes of metallic alloys