

Roberto Giovanardi was born on August 1st, 1976 in Modena, Italy. He received the Laurea degree in Chemistry from the University of Modena and Reggio E. in 2000 and the Ph.D. degree in Materials Engineering from the University of Modena and Reggio E. in 2004. He was Assistant Professor at University of Modena and Reggio E. (from 2008 to 2016) and he is now Associate Professor at the same University, where currently he teaches the courses of 'Material Science and Metallurgy' and 'Corrosion and Protection of metallic materials' at the bachelor of Mechanical Engineering and at the Master Degree of Material Engineering respectively.

The more relevant topics of research during his post-doc activity were: applied electrochemistry, study of metal/solution interfaces during adsorption and electroplating processes, corrosion resistance of metallic alloys and protective coating for metals.

In particular he has developed an electrochemical model for the reduction of Cr(VI) during chromium electroplating, suitable processes to replace Cr(VI) or reduce its concentration in electrochemical baths and alternative coatings that shows properties similar to hard chromium.

Latest research are focused on the following topics:

- 1) electrodeposition of chromium from Cr(III) solutions;
- 2) thermochemical and post-thermochemical treatments to improve corrosion and wear resistance of steel and stainless steels;
- 3) development of chemical and electrochemical methods for the recovery of precious metals from electric and electronic wastes;
- 4) development of electrochemical treatments for the cleaning of TIG welds on austenitic stainless steel to improve the corrosion resistance of joint;
- 5) optimization of the anodizing process for heat-treated aluminum alloys.

Total number of publications: 64 papers on international scientific journals (peer reviewed), 11 papers on national journals, more than 60 proceedings in national and international conference, inventor of 1 patent.

H-index 18, total citation 1062 (Scopus data)

Modena 27 June 2024

Selected Publications:

1. Roberto Giovanardi, Ercole Soragni, Claudio Fontanesi, Valentina De Renzi, Umberto del Pennino, Maria Luisa Foresti, "On the electroreduction of Cr(VI) aqueous solutions on iron and copper cathodes, Ercole Soragni", *J. Electroanal. Chem.*, **576** (2005) 243-252.
2. Giovanni Bolelli, Roberto Giovanardi, Luca Lusvarghi, Tiziano Manfredini, "Corrosion resistance of HVOF-sprayed coatings for hard chrome replacement", *Corrosion Science*, **48** (2006) 3375-3397.
3. Giovanni Bolelli, Luca Lusvarghi, Roberto Giovanardi, "A comparison between corrosion resistances of some HVOF-sprayed metal alloy coatings", *Surface and Coatings Technology*, **202** (2008) 4793-4809.
4. Luisa Barbieri, Roberto Giovanardi, Isabella Lancellotti, Marco Michelazzi, "A new environmentally friendly process for the recovery of gold from electronic waste", *Environmental Chemistry Letters*, **8** (2010) 171-178.
5. Roberto Giovanardi, Monia Montorsi, Guido Ori, Johann Cho, Tayyab Subhani, Aldo R. Bocaccini, Cristina Siligardi "Microstructural Characterisation and Electrical Properties of Multiwalled Carbon Nanotube/Glass-Ceramic Nanocomposites" *Journal of Materials Chemistry*, **20** (2010) 308-313.
6. Roberto Giovanardi, Claudio Fontanesi, Walter Dallabarba, "Adsorption of organic compounds at the aluminium oxide/aqueous solution interface during the aluminium anodizing process" *Electrochim. Acta*, **56** (2011) 3128-3138.
7. Roberto Giovanardi, Gianpaolo Orlando, "Chromium electrodeposition from Cr(III) aqueous solutions" *Surface and Coatings Technology*, **205** (2011) 3947-3955.
8. M. Catauro, F. Bollino, F. Papale, R. Giovanardi, P. Veronesi, "Corrosion behavior and mechanical properties of bioactive sol-gel coatings on titanium implants", *Material Science and Engineering: C*, **43** (2014) 375-382.
9. A. Bozza, R. Giovanardi, T. Manfredini, P. Mattioli, "Pulsed current effect on hard anodizing process of 7075-T6 aluminum alloy", *Surface and Coating Technology*, **270** (2015) 139-144.
10. M. Bononi, R. Giovanardi, A. Bozza, P. Mattioli, "Pulsed current effect on hard anodizing process of 2024-T3 aluminum alloy", *Surface and Coating Technology*, **289** (2016) 110-117.
11. R. Rosa, R. Giovanardi, A. Bozza, P. Veronesi, C. Leonelli, "Electrochemical impedance spectroscopy: A deeper and quantitative insight into the fingermarks physical modifications over time", *Forensic Science International*, **273** (2017) 144-152
12. M. Catauro, F. Bollino, R. Giovanardi, P. Veronesi, "Modification of Ti6Al4V implant surfaces by biocompatible TiO₂/PCL hybrid layers prepared via sol-gel dip coating: Structural characterization, mechanical and corrosion behavior", *Materials Science and Engineering C*, **74** (2017) 501-507
13. M. Bononi, M. Conte, R. Giovanardi, A. Bozza, "Hard anodizing of AA2099-T8 aluminum-lithium-copper alloy: Influence of electric cycle, electrolytic bath composition and temperature", *Surface and Coatings Technology* **325** (2017) 627-635
14. M. Bononi, R. Giovanardi, "Hard anodizing of AA2011-T3 Al-Cu-Pb-Bi free-cutting alloy: improvement of the process parameters", *Corrosion Science* **141** (2018) 63-71
15. L. Girelli, M. Tocci, M. Conte, R. Giovanardi, P. Veronesi, M. Gelfi, A. Pola, "Effect of the T6 heat treatment on corrosion behavior of additive manufactured and gravity cast AlSi10Mg alloy", *Materials and Corrosion* **70** (2019) 1808-1816
16. R. Giovanardi, M. Bononi, M. Messori, A. Bargellini, S. Paduano, P. Borella, I. Marchesi, "Corrosion resistance of commonly used plumbing materials for water distribution systems exposed to disinfection treatments", *Corrosion Engineering Science and Technology* **55** (2020) 224-231
17. E. Dallari, M. Bononi, A. Pola, M. Toci, P. Veronesi, R. Giovanardi, "Pulsed Current Effect on the Hard Anodizing of an AlSi10Mg Aluminum Alloy Obtained via Additive Manufacturing", *Surfaces* **6** (2023) 97-113