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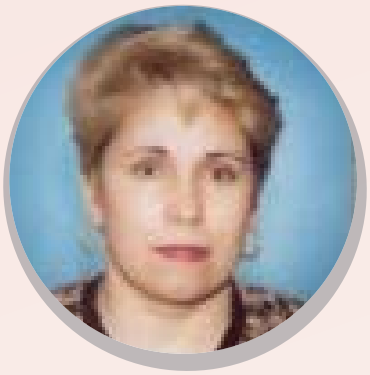

Benea Lidia

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Electrochemical methods as promising routes for nanostructuration and functionalization of materials and biomaterials

Electrochemical methods for the preparation of high-quality nanostructured surfaces and functionalization through active biomolecules electrodepositions are highlighted in this work. There are two applied electrochemical methods in our laboratories to obtain hybrid and nanocomposite structured layers or advanced functionalization of material surfaces: (i) direct electrochemical synthesis by electro co-deposition process and (ii) anodization of materials to controlled growth of nanoporous oxide films followed by the electrodeposition of hydroxyapatite or organic compounds into porous films. The main goal of the present paper is to make a summary on results obtained from applying electrochemical surface modification techniques in obtaining advanced functional surfaces and their properties characterization in terms of surface morphology and structure (SEM-EDX, XRD), the roughness and thickness, corrosion, tribocorrosion as well as the mechanical properties as nanohardness or wear resistance. Electrodeposition and the combination of electrodeposition with other electrochemical processes as controlled oxide growth by anodization can lead to a large class of hybrid layers and composite coatings or nanostructured layers (films) on different support materials and structures necessary for a future based on nanotechnology and nanomaterials to improve the surface functionalization of materials face of aggressive environments and degradation processes. Improving surface properties for corrosion and tribocorrosion of materials in specific environments give more valuable industrial and biomedical applications by increasing their life cycle.

Biography

Benea Lidia completed her PhD thesis in 1996 from Dunarea de Jos University of Galati, Romania in Materials Engineering Domain. She is the Director of research center Competences Centre Interfaces - Tribocorrosion and Electrochemical Systems (CC-Ites) and Professor of Dunarea de Jos University of Galati, Romania. She has over 250 publications that have been cited over 1400 times, and her publication H-index is 19. She has been serving as an editorial board member of reputed Journals. She was credited by Thomson Reuters as a 2016 Highly Cited Researcher because her work has been identified as being among the most valuable and significant in the field. Very few researchers earn this distinction – writing the greatest number of reports, officially designated by Essential Science Indicators as Highly Cited Papers. In addition, these reports rank among the top 1% most cited works for their subject field and year of publication, earning them the mark of exceptional impact.

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