

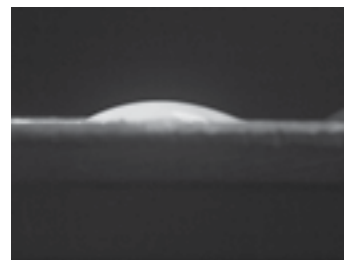
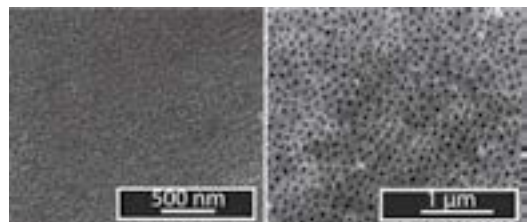
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Influence of chemical and electrochemical surface treatment of ECAP titanium on resulting corrosion properties and wettability

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ECAP titanium of lower grades with extra fine grains may be used for manufacturing of highly loaded implant or their parts and presents excellent replacement of standardly used Ti-6Al-4V alloy. This type of material also shows excellent corrosion properties and high level of biocompatibility, which can be even improved by different surface treatment. This paper deals with possibility of anodization as a method of creation of highly organized nanostructures on implant surface and further chemical treatment of anodized layer in acid/alkaline solutions. It was proved that chemical treatment increases content of specific ions in anodized structure, which will lead into more effective osteointegration process while not affecting its corrosion properties, which was tested by potentiodynamic polarization methods in artificial isotonic physiological solution according to ASTM standards for implants. On the other hand, chemical treatment positively affects wettability resp. surface energy of studied samples. Many previous studies focused on the osteointegration process confirmed that lower values of contact angle directly correlate with effectiveness of the osteointegration process and a relation between preferred induced type of organic tissue and implant surface energy has been previously published. Presented procedures of surface treatments show promising results and might find their use in commercial implant manufacturing.



Biography

Katerina Dedkova has completed her PhD from VSB-Technical University of Ostrava. She is the Researcher at the Center of Advanced Innovative Technologies. She has published more than 14 papers in reputed journals and has been serving as a Reviewer of reputed journals. Her research interests include biocompatible materials and nanocomposite materials.

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