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Application of Nano-Oxide Films on the Surfaces of Parts Made of Titanium Alloys in Order to Increase Their Corrosion Resistance

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The paper presents the results of nano-scale oxide films formation on sample surfaces made of titanium alloys that is material with a wide application in medicine and biomedicine. It was demonstrated that by the action of the plasma formed under ordinary conditions in the air media their surface is enriched with oxygen and nitrogen elements, the first substantially increases the corrosion resistance, and the other – the mechanical strength of the processed parts. The increase of corrosion resistance by at least 10 times in chemically active environments (30% aqueous solution of H₂SO₄ at the temperature of 80 °C) was observed for the processed titanium parts' surfaces.