

Abstract: Presented bachelor thesis is focused on the analysis of plasma electrolytic oxidation (PEO) preparation time effect on degradation resistance of pure Mg and WE43, Z1 and ZX10 alloys for its potential application in biomedicine. With the use of optical microscopy methods, the microstructure of the alloys in the initial state was studied. Morphology and cross sections of PEO coatings were observed using scanning electron microscopy. Corrosion resistance of PEO coating was analysed using electrochemical impedance spectroscopy (EIS) method. Structure of the PEO coatings has showed very porous, coatings with 10 minute preparation time seemed to be the most homogenous. These coatings achieved best results at corrosion measurements as well, the pure magnesium was the only exception with 15 minute preparation time. Its corrosion resistance was compared with the alloys without PEO modification, which apart from Z1 achieved far lower resistance. Surface treatment method in the form of plasma electrolytic oxidation improved resistance of chosen magnesium alloys, while to achieve desired results the optimalization of the process is necessary.