

## Bone-like Apatite Morphology on Si-Zn-Mn-hydroxyapatite Coating on Ti-6Al-4V Alloy by Plasma Electrolytic Oxidation

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**초 록:** Titanium and its alloys have been used in the field dental and orthopedic implants because of their excellent mechanical properties and biocompatibility. Despite these attractive properties, their passive films were somewhat bioinert in nature so that sufficient adhesion of bone cells to implant surface was delayed after surgical treatment. Recently, plasma electrolyte oxidation (PEO) of titanium metal has attracted a great deal of attention is a comparatively convenient and effective technique and good adhesion to substrates and it enhances wear and corrosion resistances and produces thick, hard, and strong oxide coatings. Silicon(Si), Zinc(Zn), and Manganese(Mn) have a beneficial effect on bone. Si in particular has been found to be essential for normal bone and cartilage growth and development. And, Zn has been shown to be responsible for variations in body weight, bone length and bone biomechanical properties. Also, Mn influences regulation of bone remodeling because its low content in body is connected with the rise of the concentration of calcium, phosphates and phosphatase out of cells. The objective of this work was research on bone-like apatite morphology on Si-Zn-Mn-hydroxyapatite coating on Ti-6Al-4V alloy by plasma electrolytic oxidation. Anodized alloys were prepared at 280V voltage in the solution containing Si, Zn, and Mn ions. The surface characteristics of PEO treated Ti-6Al-4V alloy were investigated using XRD, FE-SEM, and EDS.(This work was supported by NRF: 2015H1C1A1035241 &