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# Gentamicin-Loaded Ceramic-Biopolymer Dual Layer Coatings on the Ti with Improved Bioactive and Corrosion Resistance Properties for Orthopedic Applications

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## Abstract

In orthopedic surgery, osteomyelitis (bone infection) is one of the most serious complications in the last few decades and the resident drug delivery is the key strategy to overcome this issue. Combination of bioactive materials with antibiotics is broadly developed for the handling of osteomyelitis which plays a dual role as bone cell growth and as local drug delivery systems for antibiotic delivery. TiO<sub>2</sub>-SiO<sub>2</sub> mixtures were fabricated on Ti alloy by anodization method. Chitosan-Lysine (CS-LY) biopolymers were coated on composites by electrodeposition method and followed by gentamicin sulphate (GS) which was loaded as a model drug. The layers were

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