



## Bioactive HA/CNTs Composite Coatings on the NiTi Implants

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In this investigation, a hydroxyapatite/carbon nanotubes composite coating was formed at room temperature on a NiTi shape memory alloy (SMA) through electrochemical deposition using stable suspension which was prepared by adding 4 g natural hydroxyapatite powder and 1 wt. % CNTs to 50 ml n-butanol and stabilized using triethylenamine as dispersant. Surface characteristics, adhesion strength, stability and bioactivity of the composite coating were subsequently studied. EDX examination of the surface of composite coatings revealed that homogeneous dispersion of carbon nanotubes over coating. Also, the bonding strength of composite coating was found to be about 24 MPa. Compared to disc NiTi SMA sample coated with hydroxyapatite and coated with hydroxyapatite/carbon nanotubes, the bode and nyquist plots of NiTi SMA samples with hydroxyapatite/carbon nanotubes composite coating suggested that the composite coating was chemically more stable and provided corrosion resistance for NiTi SMA. In-vitro bioactivity test in SBF showed that the presence of CNTs in HA/CNTs composite coating does not have negative effect on ability of apatite formation.