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[\[PDF \(959K\)\]](#) [\[References\]](#)**Characterization of calcium phosphate deposited on valve metal by anodic oxidation with polarity inversion**[Seigo OKAWA](#)¹⁾, [Kikuo HOMMA](#)¹⁾, [Mitsugu KANATANI](#)¹⁾ and [Kouichi WATANABE](#)¹⁾

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Abstract:

Electrochemical deposition of calcium phosphate (CAP) on valve metals such as Ta, Nb, and Zr, was performed by anodic oxidation with alternate polarity inversion at an applied 20 VDC. A saturated hydroxyapatite(HAP)-phosphoric acid solution (pH 3) was used as the electrolyte. FTIR, XRD, and XPS were employed to investigate the detailed characteristics of the deposition. HAP was precipitated on Ta; HAP including brushite and monetite on Nb; and HAP and monetite on Zr. The Ca/P atomic ratios were 1.3-1.5 by XPS, and HPO_4^{2-} bands were detected on Ta by FTIR. Therefore, the HAP precipitated on Ta was a Ca-deficient HAP. In addition, the XPS spectra of the specimens showed that phosphate ions were incorporated into the anodic oxide film. Deposits with nano-grain size were observed by AFM. The results confirmed that CAP with nano-grain size was deposited on valve metals by the anodic oxidation with polarity inversion.

Key words:[Calcium phosphate](#), [Valve metal](#), [Anodic oxidation](#)[\[PDF \(959K\)\]](#) [\[References\]](#)Download Meta of Article [\[Help\]](#)[RIS](#)

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