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**Biomimetic Coating of Monophasic Brushite on Ti6Al4V in New m-5xSBF****S. Türk<sup>a</sup>, İ. Altınsoy<sup>b</sup>, G. ÇelebiEfe<sup>a,b</sup>, M. Ipek<sup>b</sup>, M. Özacar<sup>a,c</sup>, C. Bindal<sup>a,b,\*</sup>**<sup>a</sup>*Sakarya University, Biomedical, Magnetic and Semi Conductive Materials Research Center (BIMAS-RC),**Esentepe Campus, 54187 Sakarya, Turkey*<sup>b</sup>*Sakarya University, Faculty of Engineering, Department of Metallurgy and Materials Engineering, Esentepe**Campus, 54187 Sakarya, Turkey*<sup>c</sup>*Sakarya University, Science & Arts Faculty, Department of Chemistry, Sakarya 54187, Turkey.***Abstract**

Ti6Al4V plates were exposed to soaking alkali treatment resulted in Na<sub>0.23</sub>TiO<sub>2</sub> phase on the surface before realizing biomimetic Calcium–Phosphate (CaP) coating in prepared m-5xSBF and 5xSBF solutions at 37°C and pH 6. The aim of the present study was to examine CaP nucleation on the Ti6Al4V substrate in the new biomimetic medium, which allows the precipitation of uniform and monophasic CaPs coating within 2 days. Characterizations of coated surfaces were performed by SEM and EDX, FESEM, FTIR, Raman and contact angle measurements. Phase formation (Na<sub>0.23</sub>TiO<sub>2</sub>, 22-1404; TiO<sub>2</sub>, 21-1276; CaHPO<sub>4</sub>(H<sub>2</sub>O)<sub>2</sub>, 72-0713 and Ca<sub>5</sub>(PO<sub>4</sub>)<sub>3</sub>OH, 09-0432), average particle size distribution (0.1–1.8 µm for HA, 0.5–4.7 µm and 10.7–239.4 µm for width and length of Brushite) , the specific surface area (8,5623 and 116,9412 m<sup>2</sup>g<sup>-1</sup> for Brushite and HA, respectively) and phase transformations (from brushite to calcium pyrophosphate) of the coated CaP powders on the surface were also examined by XRD, DLS technique, BET, and TGA, respectively. As a result, it has been possible to obtain for the first time monophasic brushite phase coated on Ti6Al4V in m-5xSBF biomimetic medium and monophasic brushite coated surface characterization was compared with hydroxyapatite coated surface obtained in 5xSBF.

**Keywords:** *Biomimetic coating, Brushite, Hydroxyapatite, m-5xSBF*

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