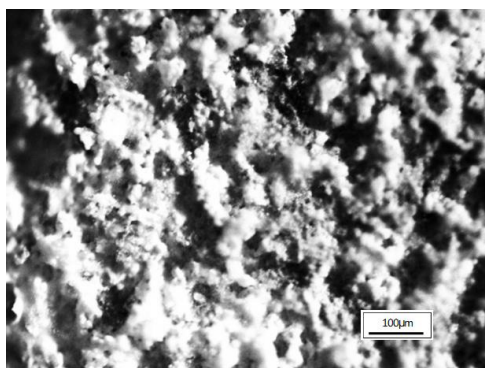


2<sup>nd</sup> International Conference and Exhibition on  
**Materials Science and Chemistry**  
July 13-14, 2017 Berlin, Germany

**Accelerated biomimetic apatite with functionality graded materials of hydroxyapatite/YSZ by electrophoretic deposition**

Makarim H Abdulkareem, Mohammed Jasim Kadhim and Nawal E Abdullatef  
University of Technology, Iraq

The aim of this work is to improve the bioactivity of hydroxyapatite/yttria stabilized zirconia by using functionally graded materials (FGMs) on 316L stainless steel as a substrate using electrophoretic deposition technique. Four layers of functionally graded materials (100% HA, 70%HA + 30%YSZ +30%HA +70%YSZ, 100% YSZ) were deposited on thin layer of chitosan deposited on substrate. 0.5 g/L chitosan was used as a binder between particles layers of FGM. Solvent which used to prepare FGM layers consist of alcohol and distilled water (ethanol, 5 vol.% water and containing 0.5 g/L of chitosan dissolved in 1 vol.% acetic acid) with 3g/L for each HA and YSZ. The pH value was performed and fitted at 4. Single and FGM layers were tested *in vitro* using simulated body fluid (SBF) with two periods (two and four weeks) in order to evaluate the bioactivity of coatings. The results demonstrated the good buildup of apatite which was increased with increasing the thickness of FGM layer. New phase of HA with high intensity were appeared as obtained from XRD. The layers have a good adherent with the substrate after immersing in SBF.



### Biography

Makarim H Abdulkareem is a PhD student in Production Engineering and Metallurgy at the University of Technology, Baghdad, Iraq. She is working as a Lecturer from 1994 at the same school where she is studying. She obtained her Bachelor's in Metallurgy Engineering in 1994, and in 2000 she got MSc in Metallurgy Engineering. She had studied Surface Engineering for PhD thesis with emphasis on the electrophoretic deposition of nanobiocomposite materials. She has contributed greatly to the understanding of surface engineering of materials and deposition of nanobiocomposite materials. Also she is a member in (TMS, JOM, AIST, and MRS) and has published many researches in her field.

engmak\_2011@yahoo.com

### Notes: