



**Organized by:** Faculty of Materials Science and Engineering – **Transilvania** University of Brasov  
**Supporting Organizations:** Romanian Academy of Technical Sciences – **ASTR**, Romanian Association of Heat treatment and Surface engineering – **ATTIS**, Romanian Foundry Technical Association – **ATTR**, Romanian Welding Society – **ASR**

## **STRUCTURAL ANALYSIS OF PM HYDROXYAPATITE-BASED BIOCOMPOSITES ELABORATED BY TWO-STEP SINTERING**

I.G. BUCSE<sup>1</sup>, C. RISTOSCU<sup>2</sup>, G. SIMA<sup>1</sup>, B. A. OLEI<sup>1</sup>, O. GINGU<sup>1</sup>

<sup>1</sup> University of Craiova, Faculty of Mechanics, 107 Calea Bucuresti, 2200512, Craiova, Romania,  
[bucse\\_ionela@yahoo.com](mailto:bucse_ionela@yahoo.com),

<sup>2</sup> Laser Department, National Institute for Laser, Plasma and Radiation Physics, PO Box MG-36, RO-77125, Magurele, Ilfov, Romania

**Keywords:** biocomposites, structural analysis, two steps sintering

**Abstract:** The aim of the research is to develop bone grafts from biocompatible materials by powder metallurgy technology (PM). This paper presents the results of experimental research regarding the elaboration of some biocomposites by two steps sintering (TSS). The sintering parameters are: the 1st step = the sintering temperature,  $T = 900^{\circ}\text{C}$  for 1 min. followed by the 2nd step =  $800^{\circ}\text{C}$  for  $t = 450$  respectively 600 minutes. The paper follows the foaming agents and the sintering parameters influence on the bone implants structure. The structural analysis studied through SEM and EDX outlines the presence of the foaming reaction products of which  $\text{TiO}_2 / \text{Ti}$ , and  $\text{CaO}$  with positive effects on the bone graft functionality.

**Acknowledgements:** We hereby acknowledge the research project PNII-PT-PCCA-2013-4-2094, (Research of the bone substitution with biocomposite materials processed by Powder Metallurgy specific techniques, acronym BONY for the financial support.