

## 3D Printing of Tricalcium Phosphate Scaffolds

T. Kurniawati<sup>1</sup>, P. Cheang<sup>1</sup>, and M. Chandrasekaran<sup>2</sup>

<sup>1</sup> *Division of Bioengineering, Nanyang Technological University, 50 Nanyang Avenue, Singapore 639798, Singapore*

<sup>2</sup> *Singapore Institute of Manufacturing and Technology, 71 Nanyang Drive, Singapore 638075, Singapore*

### ABSTRACT

Various solid freeform fabrication techniques have been used to fabricate three-dimensional scaffolds. In this study, the author utilized a three-dimensional printing (3DP) technique to develop porous scaffolds. The starting powders of tricalcium phosphate, arabic gum and cellulose have been blended with two different compositions for the 3D process. Gum as binder material and cellulose as porogen were debinded with heat treatment process. After debinding process, the printed scaffolds were then sintered to two different temperatures, which were finally subjected to compression and 3-point bend test, and porosity analysis.

**Keywords:** three-dimensional printing, tricalcium phosphate and scaffolds