ENVIRONMENTALLY SAFE BIOMATERIALS FOR 3D PRINTING

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ABSTRACT

Three-dimensional (3D) printing is a wide-ranging technique that can create complex structures and 3D objects for different purposes. This technique is also called additive manufacturing (AM), because it enables rapid prototyping, where according to digital view, model is formed by depositing material layer by layer. Different materials can be applied in this process, but not all of them are perspective and suitable in terms of protecting the environment. Biodegradable materials are better for the environment and can be used to replace non-biodegradable materials for this purpose. In the process of printing, biomaterials are being coverted into the ink so that they can be used to print complex geometric structures. Mixtures of biopolymers with different properties are mostly used, thus forming ink of the desired characteristics. Before mixing the polymers, they need to be modified by appropriate processes in order to form the ink of desired characteristics. In this regard, mechanical, structural and rheological properties of printable biopolymeric-based materials and inks and are discussed. The aim of this paper is to represent the current achievement it the field of 3D printing with an emphasis on environmentally safe biomaterials that can be used to produce well-defined 3D models with great preciseness.

Keywords: 3D printing, additive manufacturing, environmentally safe materials, biopolymers.