

Biomedical and microbiological applications of bio-based porous materials: a review

ABSTRACT

Extensive employment of biomaterials in the areas of biomedical and microbiological applications is considered to be of prime importance. As expected, oil based polymer materials were gradually replaced by natural or synthetic biopolymers due to their well-known intrinsic characteristics such as biodegradability, non-toxicity and biocompatibility. Literature on this subject was found to be expanding, especially in the areas of biomedical and microbiological applications. Introduction of porosity into a biomaterial broadens the scope of applications. In addition, increased porosity can have a beneficial effect for the applications which exploit their exceptional ability of loading, retaining and releasing of fluids. Different applications require a unique set of pore characteristics in the biopolymer matrix. Various pore morphologies have different characteristics and contribute different performances to the biopolymer matrix. Fabrication methods for bio-based porous materials more related to the choice of material. By choosing the appropriate combination of fabrication technique and biomaterial employment, one can obtain tunable pore characteristic to fulfill the requirements of desired application. In our previous review, we described the literature related to biopolymers and fabrication techniques of porous materials. This paper we will focus on the biomedical and microbiological applications of bio-based porous materials.

Keyword: Biomaterial; Biocompatibility; Porosity