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Cellulose-based hydrophobic biopolymer produced by *Phyllobacterium myrsinacearum*

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Bacterial cellulose (BC) presents a unique set of properties that make them attractive for several applications including biomedical ones. One of the common characteristics of the bacterial cellulose reported in the literature is its hydrophilicity. This fact implies that for some applications, BC must be modified in order to render it hydrophobic. In this study, we report the production and characterization of BC from *Phyllobacterium myrsinacearum*20M4, a bacterial strain never referred to as a producer of BC. The biopolymer was thoroughly characterized and from the obtained results it can be highlighted that the biopolymer produced by these bacteria presents a semi-crystalline structure with a morphology of long fibrils with nanometric diameter. The wettability characterization revealed an accentuated hydrophobic behavior of the BC with contact angles with water around 120o in opposition to hydrophilic BC produced from all other reported bacterial species. The mechanical properties evaluated by nanoindentation revealed higher hardness and Young modulus than other types of BC. These results open new possibilities in the development of 3D printed composite scaffolds based on hydrophobic polymers, using this BC as reinforcement.

Biography

AP Piedade has a BSc in Biochemistry, an MSc in Cellular Biology and a PhD in Mechanical Engineering. She is head of the Bioengineering and Polymer Synthesis Group of CEMMPRE. She co-authored more than 40 scientific research papers and more than 100 communications in National and International Conferences. She has coordinated and participated in more than 30 research projects, both National and European, some of them in an industrial environment.

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