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Biogenic approaches for SiO₂ nanostructures: Exploring the sustainable platform of nanofabrication (Book Chapter)

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Abstract

Silica is one of the most common metal oxides, which has been explored for many potential applications. When its size reduced to nano, unique physicochemical properties were appeared, which received extensive scientific and technological importance in many fields including optics, catalysis, drug delivery, and biomedical imaging. As the demand for SiO₂ nanostructures expands in many areas, the synthetic process plays a vital role in order to meet the specific requirements. A wide range of physical and chemical processes have been established and reported; however, there is a need for the sustainable greener alternative. Research and development activities have been promoted for the synthesis of SiO₂ nanostructures employing biological resources including bacteria, fungus, plants, and other bio-substances. Apart from the synthesis, the biogenic processes have also been explored for the modification of SiO₂ nanostructures to improve/create their functional properties. This chapter describes the recent developments in the biogenic approaches for SiO₂ nanostructures as well as their potential applications. © 2018 Scriver Publishing LLC.

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