A Comprehensive Review on the Heavy Metal Removal for Water Remediation by the Application of Lignocellulosic Biomass-Derived Nanocellulose

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Aims and scope

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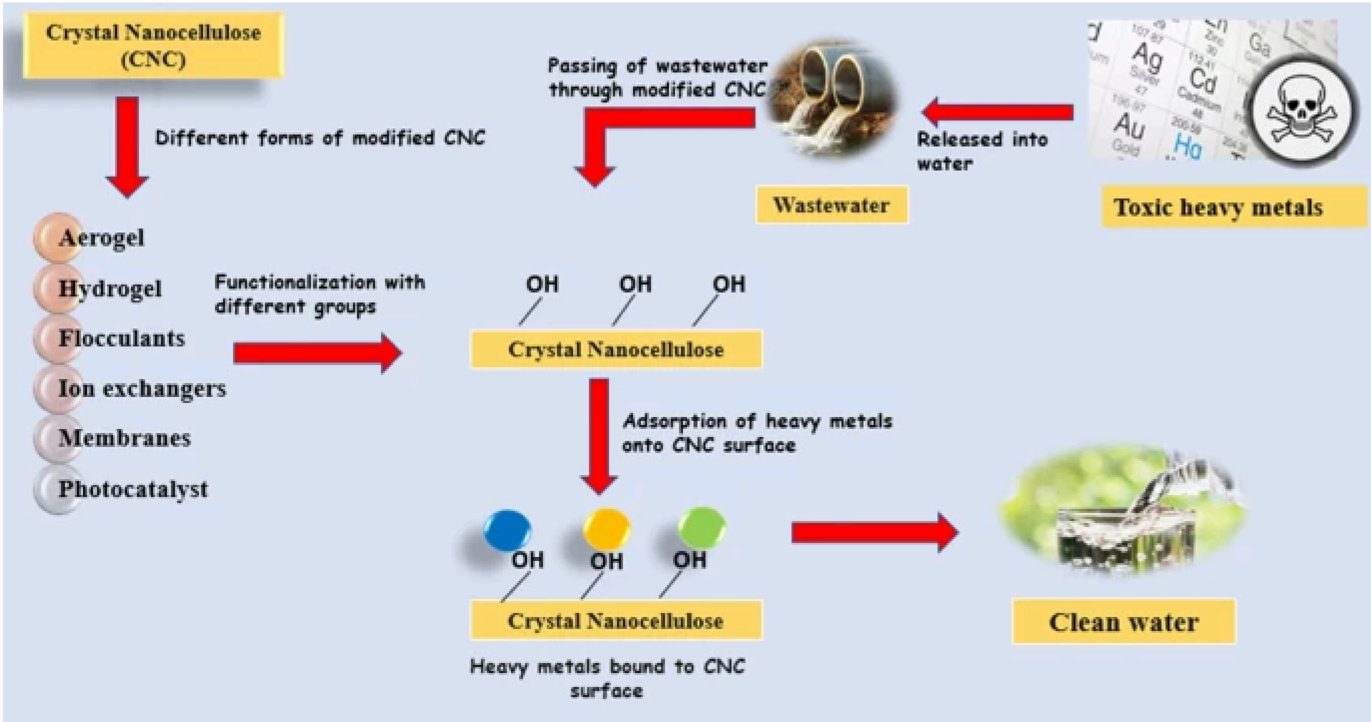
Abstract

The present review describes the application of lignocellulosic biomass-derived nanocellulose for wastewater remediation with a focus on the removal of heavy metals. Nanocellulose and its nanocomposite are among the emerging materials of this century, with an abundance of application in the versatile field of composites, medicines, functional additives, and water treatment. Water treatment has received attention from the commercial and academic sector, with a large emphasis on one of the biggest problems faced by humans in the 21st century i.e., clean potable water. There are various sources of water pollution including heavy metal toxifications. The applications of cellulose and its various composites for heavy metal removal for wastewater treatment have been elaborated on in this review. Several biosorbent based on nanocellulose such as aerogels, hydrogels, ion-exchange beds, flocculants, and photocatalyst to remove heavy metal toxicity have been discussed furthermore. Research work on the effect of composites of carbon nanotube, functionalized cellulose has been covered too.

Graphic Abstract



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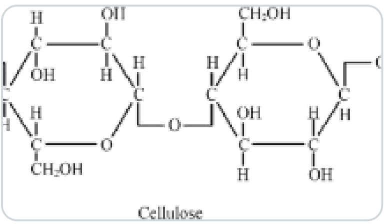

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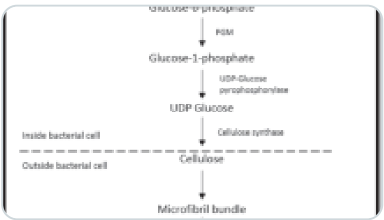

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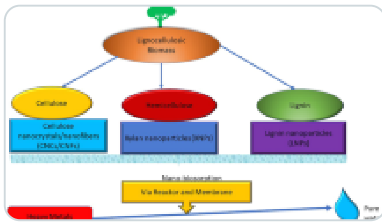

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Ethics declarations

Conflict of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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