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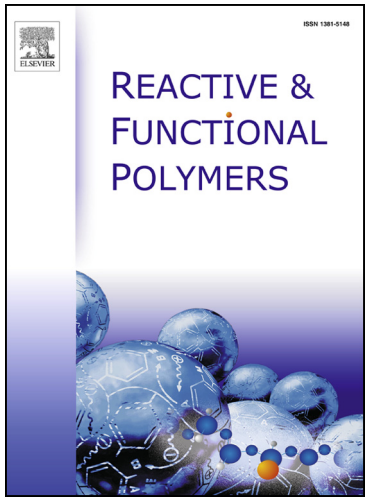

Review

Polymer-based Chelating Adsorbents for the Selective Removal of Boron from Water and Wastewater: A Review

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Polymer-based Chelating Adsorbents for the Selective Removal of Boron from Water and Wastewater: A Review

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Abstract

Boron removal from water is a highly interesting research area that has been addressed in various investigations in the recent years. This is due to the expansion of harmful effects of boron traces in water streams on the environment and human health with the rise in boron global demand in various industries that coincided with the implantation of more stringent water quality standards. Various technologies have been applied for the removal of boron from water solutions, including ion exchange technology, which has a great potential in treating varieties of boron-containing streams up to levels in parts per million using boron-selective adsorbents. This article comprehensively reviews the latest progress in the development of polymer-based boron-selective (chelating) materials and their applications for the removal of boron from water solutions, including commercial boron-selective resins (BSRs) and their researched counterparts. The emerging trends in the development of alternative adsorbents with different substrates, morphologies, and functional groups are also elucidated. The future directions to overcome the limitations of the present generation of resins are also discussed.

Keywords: Boron-selective polymers, glucamine-containing resins, water and wastewater treatment, chemisorption

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