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Review

Development and Current Trends on Ion Exchange Materials

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Received 25 Oct 2021, Accepted 01 Nov 2022, Published online: 05 Dec 2022

🗨 Download citation  <https://doi.org/10.1080/15422119.2022.2149413>



ABSTRACT

Ion-exchange materials are ubiquitous in the separation and purification industry. This historically important preparative technique is still flourishing with numerous modifications and possibilities so as to fulfill the needs of modern society in desalination, clean energy, bone tissue engineering, synthetic adhesives, sensors and actuators. The efficacy of ion exchangers has already been proven and this review analyzes the developments and latest trends in various kinds of ion-exchange materials. The review start with a discussion on fundamental concepts of

ion exchangers and their classifications. It further develops with the remarkable contributions and combined efforts of researchers made to date. This review primarily focuses on the major research on composite and nanocomposite ion exchangers, which are believed to be the future ion exchangers in separation to next-generation clean energy technologies. Later, it concludes with the scope and challenges of ion-exchangers for sustainable development.

Q KEYWORDS: Ion exchange materials inorganic-organic hybrid

composite and nanocomposite ion exchangers

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