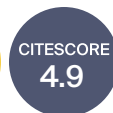




metals



Special Issue Reprint

Advanced Sorbents for Separation of Metal Ions

www.mdpi.com/books/reprint/10678

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ISBN 978-3-7258-3339-9 (Hardback)

ISBN 978-3-7258-3340-5 (PDF)



This reprint explores innovative solutions to one of the most critical challenges in environmental science and industrial processes—sustainable and effective metal–ion separation. With rising metal demands and stricter environmental regulations, advanced sorbent materials are emerging as transformative tools for addressing these issues. Readers will gain significant insights into advanced materials such as biosorbents, ion exchange resins, silica adsorbents, and polymeric sorbents. These materials demonstrate exceptional capabilities in separating and adsorbing metal ions from diverse sources, including industrial wastewater, mining leachates, and recycling streams. This publication delves into adsorption mechanisms, process optimization, and the pivotal role of surface modifications in enhancing selectivity, capacity, and kinetics. This publication also highlights groundbreaking research on sustainable sorbents derived from agricultural waste, brown seaweed, and bone char, alongside innovations in nanosorbents and dispersive microextraction techniques. Practical applications range from environmental remediation and hydrometallurgy to nuclear waste management, offering critical insights for scientists, engineers, and environmental professionals seeking efficient and eco-friendly solutions for metal recovery and pollution control. Written in an accessible style, this publication bridges complex scientific concepts and practical applications, making it an indispensable resource for academic, industrial, and environmental audiences.



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