



Showcasing research from Professor Jinan Niu's Mineral Nanomaterials Group, in Professor Peizhong Feng's Research Center for Mineral Materials and Solid Waste Utilization, School of Materials Science and Physics, China University of Mining and Technology, Xuzhou, P.R.China. Image designed and illustrated by Jinan Niu.

Exploring layered double hydroxide efficiency in removal of fluoride ions from water: material insights, synthesis and modification strategies and adsorption mechanisms

Fluoride ion pollution is currently one of the important factors causing chemical risks in drinking water. Adsorption method is an important way to solve this problem due to its simple operation and low cost. Among many adsorbents, layered double hydroxide (LDH) material has the characteristics of simple preparation, adjustable layer composition, adjustable interlayer anion type, and high adsorption capacity. This work provides a comprehensive summary of LDHs used for fluoride ion adsorption, from the perspectives of composition, synthesis, modification, environmental factors affecting adsorption performance, adsorption mechanism, existing problems and future directions.

As featured in:



See Jinan Niu, Peizhong Feng *et al.*, *RSC. Sustainability.*, 2025, **3**, 715.