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Preparation of a Surface-grafted Imprinted Ceramic Membrane for Selective Separation of Molybdate Anion from Water Solutions

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Highlights

- The molybdate anion surface-imprinted ceramic membrane was prepared.
- It was prepared by graft polymerization combined with surface imprinting technique.
- Graft polymerization conditions influenced greatly the grafting degree of polymer.
- It exhibited high adsorption capacity and great selectivity for molybdate anion.

Abstract

A surface-grafted imprinted ceramic membrane (IIP-PVI/CM) for recognizing molybdate (Mo(VI)) anion was prepared by surface-initiated graft-polymerization. Firstly, raw alumina ceramic membrane (CM) was deposited with SiO₂ active layer by situ hydrolysis deposition method. Subsequently, γ -methacryloxy propyl trimethoxyl silane (MPS) was used as a coupling agent to introduce double bonds onto the SiO₂ layer (MPS-CM). Then, 1-vinylimidazole (VI) was employed as a functional monomer

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