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Removal efficiency of Pb(II), Zn(II), Cd(II) and Cu(II) from aqueous solution and natural water by ketoenol-pyrazole receptor functionalized silica hybrid adsorbent

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Abstract

In this study, we reported an efficient, alternative, and low-cost adsorbent for the efficient removal of Pb(II), Zn(II), Cd(II) and Cu(II) from water. The new hybrid material has been prepared by immobilizing a conjugated system (2Z)-1-(1,5-dimethyl-1H-pyrazol-3-yl)-3-hydroxybut-2-en-1-one on silica gel previously doped with 3-aminopropyltrimethoxysilane. The formed surface (SiNPz) was perfectly analyzed. Adsorption studies have demonstrated the ability to highlight the surface designed for efficient removal of above toxic metals from aqueous solutions using FAAS. The new material was used for the extraction of metals from natural water and showed efficiency results for toxic heavy metals. © 2017 Taylor & Francis.

Author Keywords

Adsorption; functional hybrid material; natural water; toxic heavy metals

Index Keywords

Adsorption, Doping (additives), Driers (materials), Efficiency, Heavy metals, Hybrid materials, Lead, Lead removal (water treatment), Silica, Silica gel, Solutions, Zinc, Zinc compounds; 3-aminopropyl trimethoxysilane, Conjugated systems, Functional hybrid materials, Functionalized silica, Low-cost adsorbents, Natural waters, Removal efficiencies, Toxic heavy metals; Chemicals removal (water treatment)

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