



Removal of Ni(II), Cd(II) from aqueous solutions by sorption onto Copper Oxide Nanomaterials

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Abstract:In this work, Copper Oxide nanoparticles were examined and compared for their ability in removing Ni (II) and Cd (II) from aqueous solutions. Batch operations were conducted with different process parameters such as contact time, nanoparticles concentration, initial arsenic concentration and pH. Results revealed that Copper Oxide Nanoparticles(CON) presented an outstanding ability to remove both Ni(II) and Cd(II). Removal efficiency was enhanced with increasing the contact time but reduced with increasing initial Ni(II) and Cd(II) concentrations and pH. It could be concluded that Copper Oxide nanoparticles showed remarkable potential for Ni(II), Cd(II) removal from aqueous solution e.g. contaminated water. The adsorption kinetics fitted well with pseudo-second-order model and the adsorption data obeyed the Langmuir equation. The adsorption isotherm data could be well described by the Freundlich equation. Results of this study suggest that CON show potential for developing a simple process for field applications to remove Ni(II), Cd(II) from aqueous systems.

Key words: Ni(II), Cd(II), Copper Oxide nanoparticles(CON), Adsorption, Isotherm.

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