



## **Cadmium (Cd) Removal from Aqueous Solution Using Microwave Incinerated Rice Husk Ash (MIRHA)**

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### **ABSTRACT**

The presence of heavy metals in aquatic systems has become a serious problem. Heavy metals can have adverse effects on the environment as well as on human health. As a result, much attention has been given to new technologies for removal of heavy metal ions from contaminated waters. In this study, Microwave Incinerated Rice Husk Ash (MIRHA), a locally available agricultural waste, was used for the removal of Cd (as a representative heavy metal) from synthetic wastewater by batch adsorption process. The effects of pH, initial metal concentration, and contact time on Cd removal efficiency were studied. pH 4 was found to be the optimum. The removal efficiency was found to be correlated with the initial metal concentration and contact time between adsorbent and adsorbate. Cd adsorption kinetics followed the pseudo-second-order model and implied chemisorption. The adsorption equilibrium of Cd can be well described by the Freundlich isotherm model.

**Keywords:** Adsorption, Cadmium (Cd), kinetic, isotherm, microwave incinerated rice husk ash (MIRHA)

### **INTRODUCTION**

Environmental contamination with heavy metals arises mainly as a result of industrial activities, although other sources, such as

agriculture and waste disposal, are also contributors. These heavy metals are discharged into the atmosphere, water and land-based environments and may reach high concentrations, mainly near discharge sites. Metals can be distinguished from other toxic pollutants as they are non-biodegradable and cannot be converted to a simpler form than the elemental.

Various treatment techniques have been employed for the removal of heavy metals from water; these include precipitation,

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