

عنوان مقاله:

Comparative Studies on Ultrasound Pre-treated Peanut Husk Powder and Ultrasound Simultaneous Process on Heavy Metal Adsorption

محل انتشار:

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خلاصه مقاله:

The removal of copper (II) ion by using ultrasound pre-treatment to increase the pores structure and surface area on peanut husk powder via direct sonication (ultrasound probe) and indirect ultrasound (ultrasound bath) at powder level 3.5 W. In previous studies, researchers had applied ultrasound simultaneous with adsorption process. This method is not suitable to treat huge amount of heavy metal in wastewater effluent. In this study, the percentage removal of copper (II) ion and adsorption capacity of direct and indirect ultrasound pre-treated peanut husk powder were compared with untreated peanut husk powder and simultaneous ultrasound adsorption process. The peanut husk powder was characterized by scanning electron microscope (SEM). The effect of variables such as different initial concentration (10-50 mg/L), contact time (0.5–3 h), pH (2–8), and dosage (0.1–0.3 g) were evaluated. 3 h adsorption equilibrium time was required for adsorption of copper (II) ion onto peanut husk surface. The indirect ultrasound pre-treated peanut husk powder has achieved the highest copper (II) ion percentage removal of 99.79% at pH 6 and 0.3 g dosage. It was 57.07% and 19.63% higher than untreated peanut husk powder and simultaneous ultrasound respectively. Both ultrasound pre-treated peanut husk powder shown significant improvement on copper (II) ion removal compared to untreated peanut husk powder and simultaneous ultrasound.

کلمات کلیدی:

Ultrasound, Adsorption, Copper (II) ion, Peanut Husk Powder

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