

Copper Removal from Synthetic Wastewater by a Novel Fluidized-bed Homogeneous Crystallization (FBHC) Technology

Authors : Cheng-Yen Huang, Yu-Jen Shih, Ming-Chun Yen, Yao-Hui Huang

Abstract : This research developed a fluidized-bed homogeneous crystallization (FBHC) process to remove copper from synthetic wastewater in terms of recovery of highly pure malachite ($\text{Cu}_2(\text{OH})_2\text{CO}_3$) pellets. The experimental parameters of FBHC which included pH, molar ratio of copper to carbonate, copper loading, upper flowrate and bed height were tested in the absence of seed particles. Under optimized conditions, both the total copper removal (TR) and crystallization ratio (CR) reached 99%. The malachite crystals were characterized by XRD and SEM. FBHC was capable of treating concentrated copper (1600 ppm) wastewater and minimizing the sludge production.

Keywords : copper, carbonate, fluidized-bed, crystallization, malachite

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