Removal of Cu$^{2+}$ and Cd$^{2+}$, and humic acid and phenol by electrocoagulation using iron electrodes

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**ABSTRACT**

This work concerns the plotting current intensity $I$ (A) vs. applied voltage $E$ (V) curves of electrocoagulation (EC) of some organic (humic acid (HA) and phenol) and inorganic (copper sulphate and cadmium chloride) compounds which are often found in water/wastewaters. The study is conducted in batch mode using Fe electrodes at laboratory scale. The device is constituted with two ordinary steel electrodes with active area $S = 19.95$ cm$^2$ and 4 cm as separation from each other in a 500 mL beaker which is filled with 500 mL solution to treat. The applied voltage is 12 V for 45 min as EC time and an optimal pH which is determined from current intensity $I$ (A) as a function of applied voltage $E$ (V) curves. Depending on the pollutant type, different EC process mechanisms are proposed and less or more important reduction levels are achieved in these experiments.

**Keywords:** Electrocoagulation (EC); Humic acid (HA); Phenol; Copper; Cadmium; Iron

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