Supplementary data

Copper current collectors reduce long-term fouling of air cathodes in microbial fuel cells

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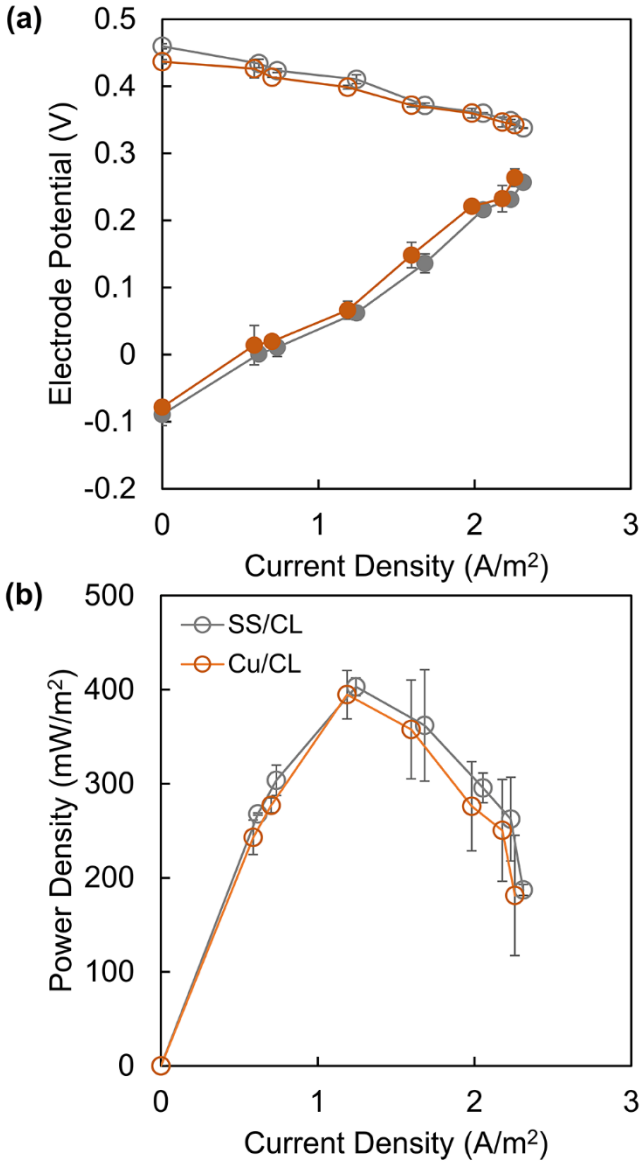
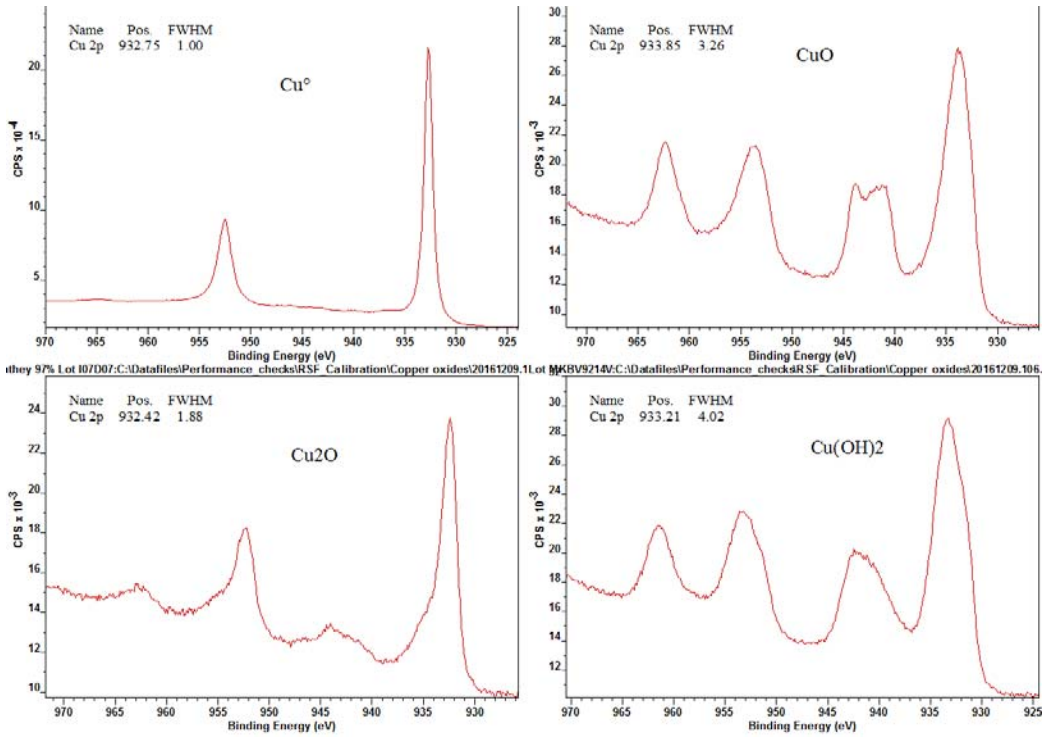


Fig. S1. (a) Electrode potentials for SS and Cu reactors at week 13 (solid symbols, anode potentials; open symbols, cathode potentials). (b) Power density curves for SS and Cu reactors at week 13.

(a)



(b)

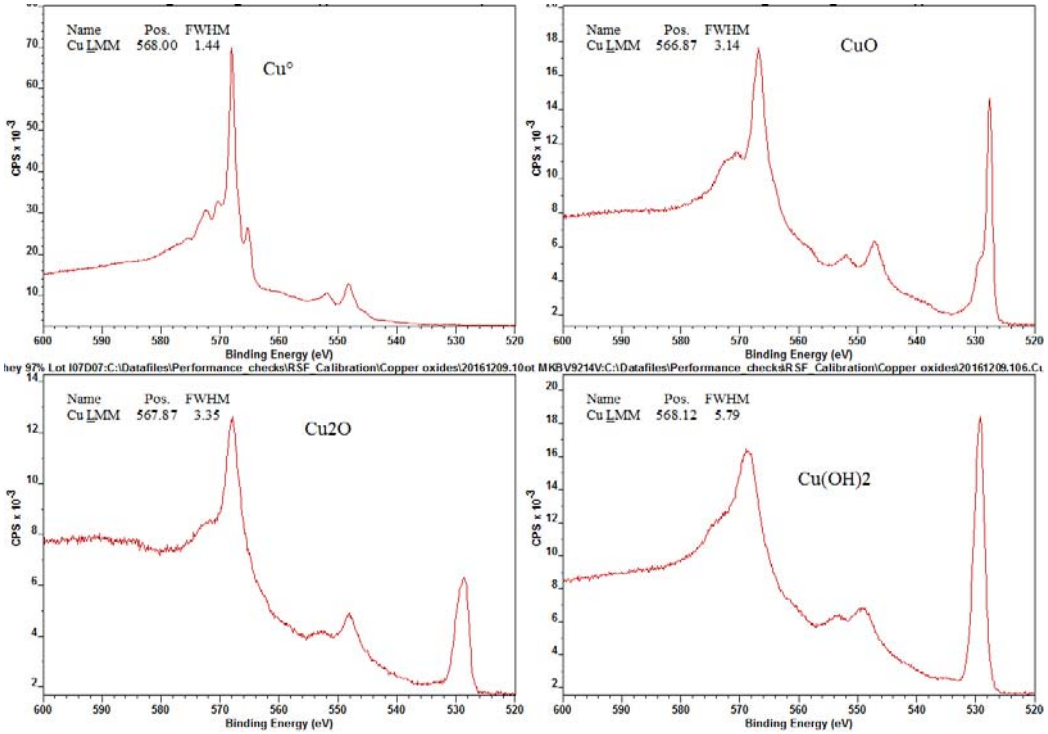


Fig. S2. XPS spectra ((a) Cu2p3/2 peak and (b) Cu LMM peak) of the samples analyzed.

Antimicrobial activities of different copper species

Due to the changes in the copper species of the cathode over time, the toxicity of copper with different oxidation states was evaluated based on viable plate counts of mixed culture microorganisms in the wastewater samples. The total viable counts decreased over time for all copper species, but at a different rate depending on the copper species added to wastewater samples (Fig. S3). Wastewater samples that had Cu^0 or Cu_2O powder showed lower viable numbers than the samples that had CuO powder. Control samples that had no copper species had negligible changes in viable counts.

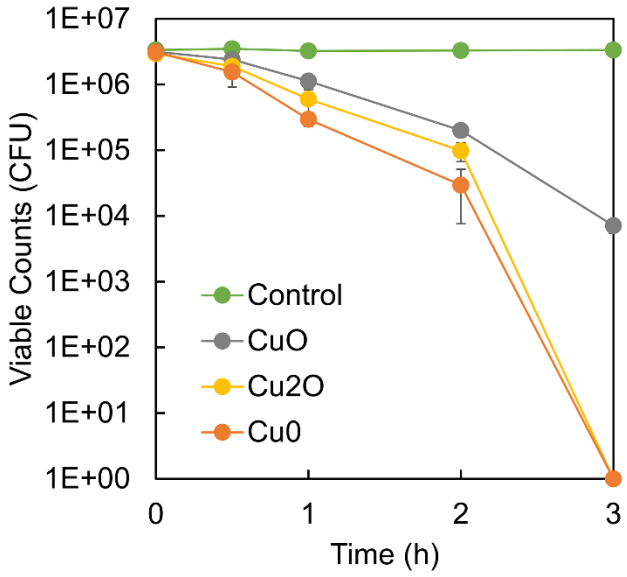


Fig. S3. Antimicrobial activities of various copper species suspended on a wastewater sample