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# Microbial fuel cell-photoelectrocatalytic cell combined system for the removal of azo dye wastewater

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## Abstract

In this study, a novel parallel circuit microbial fuel cell–photoelectrocatalytic cell (MFC-PEC) combined system was established to enhance azo dye removal. Results showed that this system had synergistic effects compared with the MFC alone. In the MFC part, a 56% decrease in chemical oxygen demand (COD) and 85% decolorization were achieved, and further reduced by 25% and 12% in the PEC part where titania nanotube functioned as the photoelectrode. For one thing, the PEC raised the maximum current of the MFC by 14.2%, which facilitated COD removal and decolorization in the MFC and promoted adenosine triphosphate (ATP) level of anode microorganisms, for another, this system significantly increased the dye removal in the PEC. Besides, cyclic voltammograms illustrated intermediate products degradation in this system. Hence, the system achieved marked deep decolorization and rapid toxic intermediate products degradation of high concentration azo dyes.

## Keywords

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