

## Microbial fuel cells using volatile organic acid for electrical current generation

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The Microbial fuel cells (MFCs) were operated using pure culture (using *Shewanella putrefaciens*) and mixed culture (using HEROS). Type I having ferricyanide as a mediator of cathode generated power density 5.25 mW/m<sup>2</sup> and current density 40.30 mA/m<sup>2</sup>. Type I MFC plus methylene blue in the anode compartment, Type II was evaluated maximum current density 154.8 mA/m<sup>2</sup> maximum power density 48.1 mW/m<sup>2</sup>. These power densities and current density are higher than those without methylene blue for MFCs with *S. putrefaciens* CN32. Power generation using single-compartment MFC was maximum current density 254.8 mA/m<sup>2</sup> and maximum power density 81.5 mW/m<sup>2</sup>. Power generation of MFC using HEROS sample without installation adding oxygen was evaluated as maximum power density of 141 mW/m<sup>2</sup>. However MFC inoculated with HEROS sample supplying air as 0.5 vvm velocity showed 488 mW/m<sup>2</sup> of maximum power density and adding 2M H<sub>2</sub>O<sub>2</sub> yielded maximum power density as 560 mW/m<sup>2</sup>. After 4 days operation, the MFC generated maximum power density 1,676 mW/m<sup>2</sup>.