

## Supplementary information

### **Novel application of peptaibiotics derived from *Trichoderma* sp. for methanogenic suppression and enhanced power generation in microbial fuel cell**

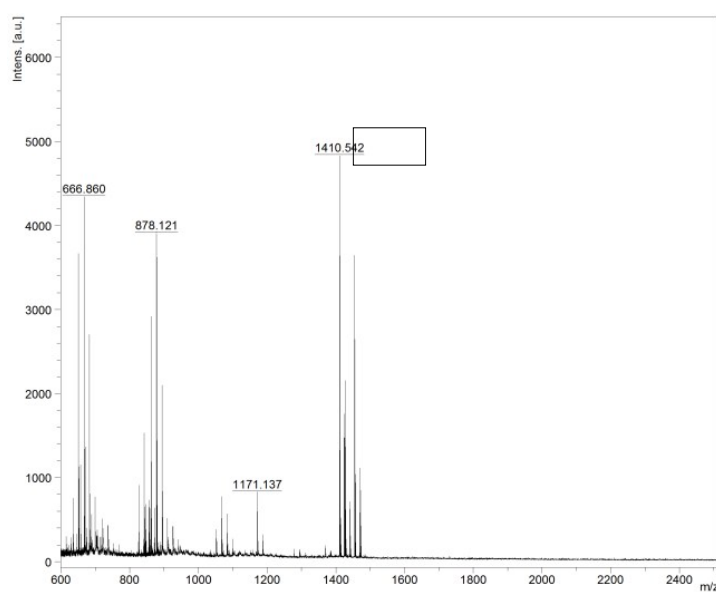
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#### **Methods**

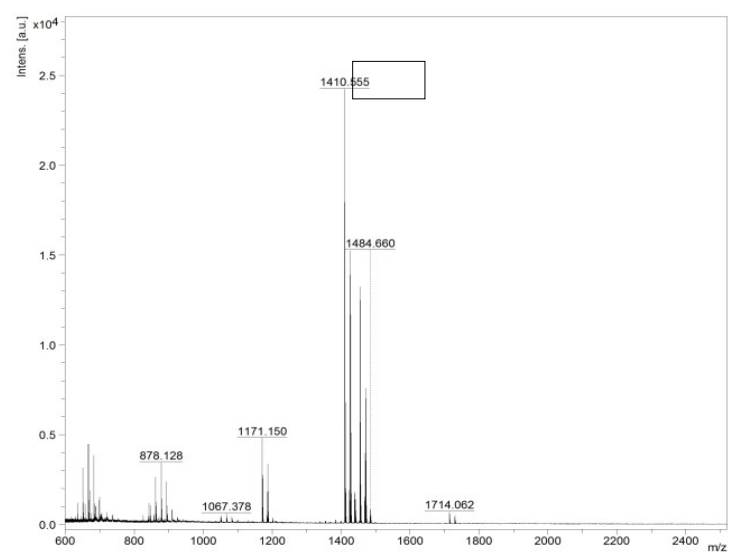
##### **Preparation of electrode assembly**

Anode and cathode of all MFCs were fabricated with carbon felt current collector. Carbon felts were cut into the pieces with dimension of 4.2 cm x 4 cm. Bare carbon felt pieces were successively treated by soaking in 1 N HCl and 1 N NaOH for 1 h and washed after each soaking process with de-ionized water until neutral pH and dried in hot air oven at 100° C for 24 h. The treated felts were further heat treated in muffle furnace at 400° C for 30 min to remove volatile contaminants. Finally the treated carbon felt pieces were stored in air-tight desiccator to fabricate anode and cathode. Graphene oxide (GO) was synthesized using modified Hummer's method [27]. GO-PTFE modified anode was fabricated by following procedure. Required amount of GO was dispersed in deionized water to make 2mg/ml of GO suspension using bath sonicator operated at 150 kHz ultrasound frequency for 3 h. The above suspension was centrifuged at 5000 rpm for 5 min to get stable GO suspension which had clear light brown colour. Then 1 ml of polytetrafluoroethylene solution (PTFE, 60 wt%, Sigma Aldrich, USA) was added to the GO suspension and then further sonicated for 1 h. The above composite solution was then soaked in previously treated piece of carbon felt in a flat container for 24 h at 60°C. The modified anodes were then carefully removed from the flat container and stored in air-tight desiccator. Cathodes were modified with V<sub>2</sub>O<sub>5</sub> micro-flower/Vulcan XC composite catalyst layer as described by Noori et al.[28].

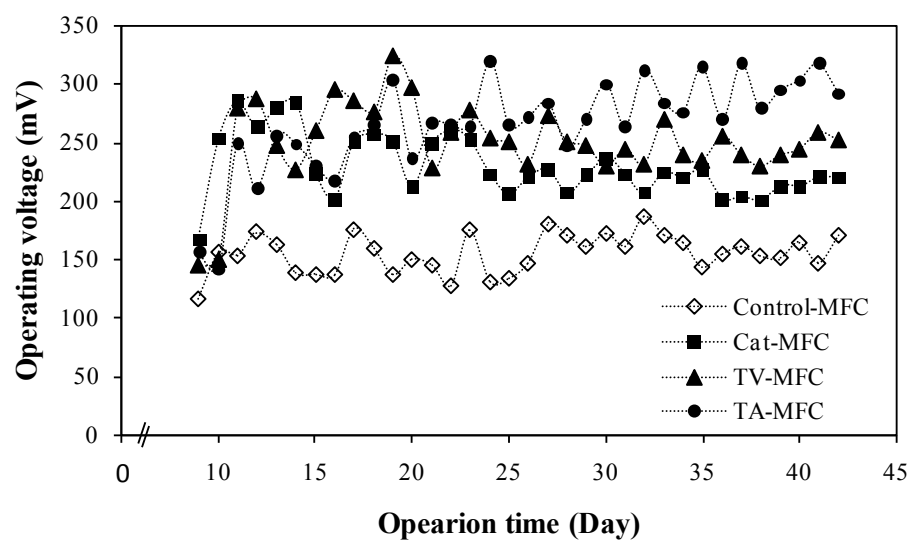
## Figures



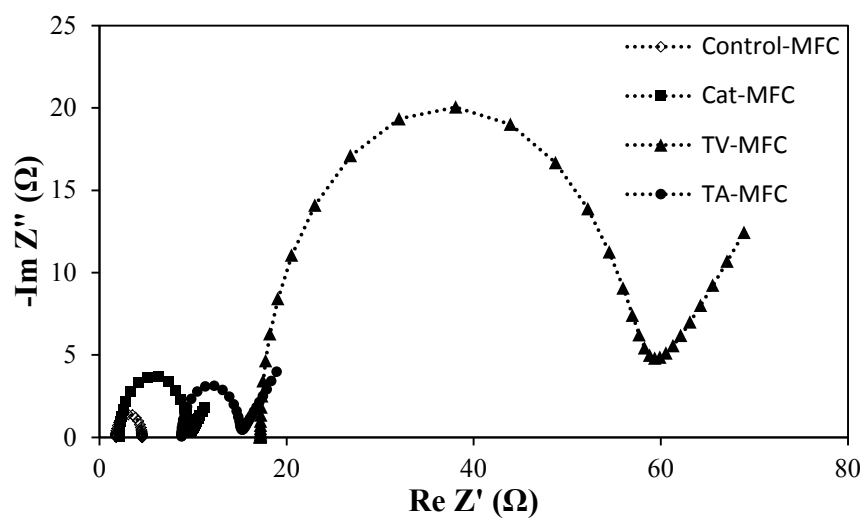
**Fig. S1.** Mass spectrometric (MS) profile of *T. atroviride* extract for fraction 2



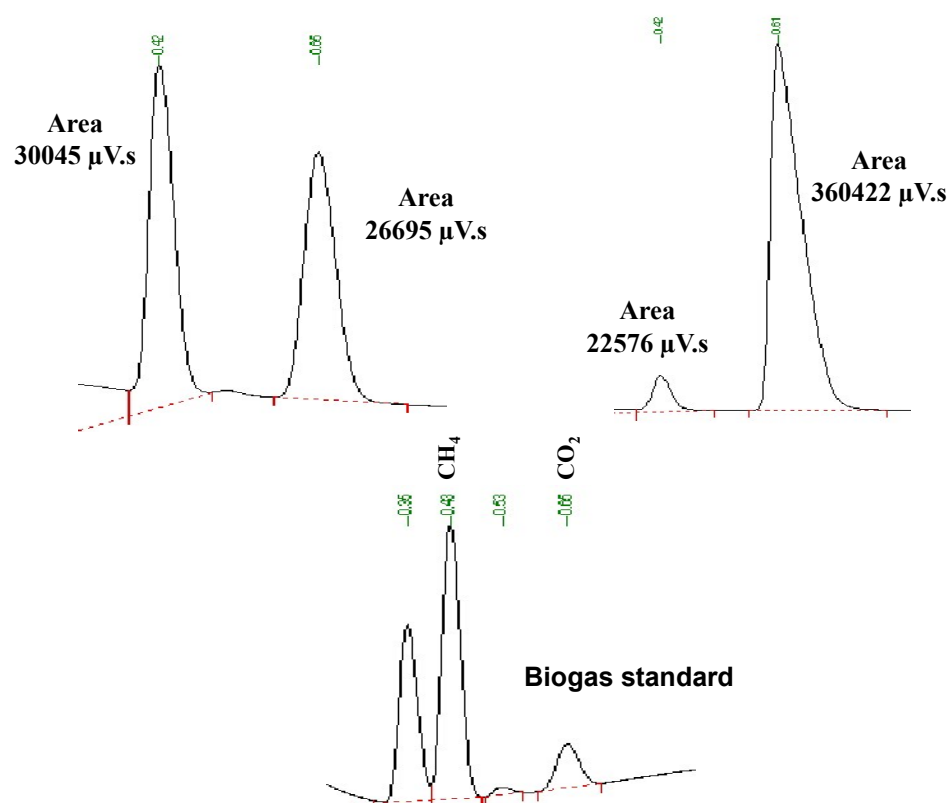
**Fig. S2.** Mass spectrometric (MS) profile of *T. atroviride* extract for fraction 3



**Fig. S3.** Operating voltage data of cycle operation for four MFCs



**Fig. S4.** Nyquist plot with experimental data (week 1) for the analysis of impedance elements



**Fig. S5.** Gas chromatography analysis with TCD of biogas collected from Control-MFC and Cat-MFC