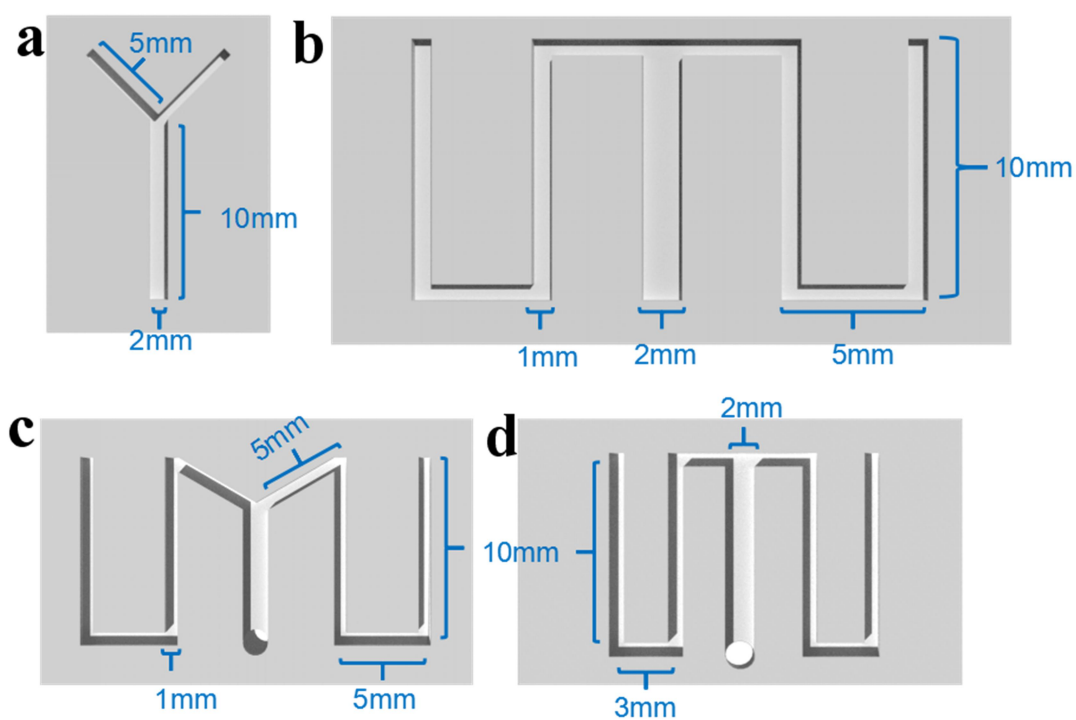*Supporting information*

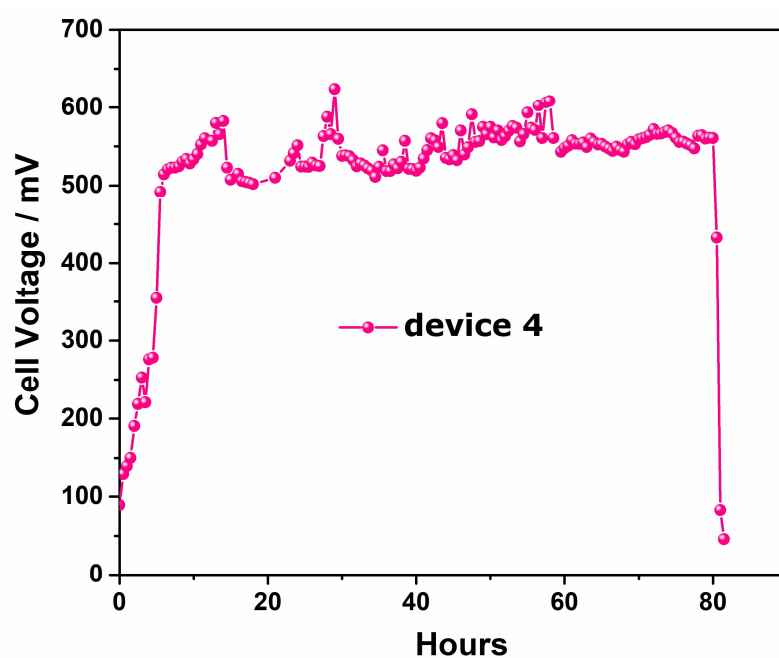# Fast start-up microfluidic microbial fuel cells with serpentine microchannel

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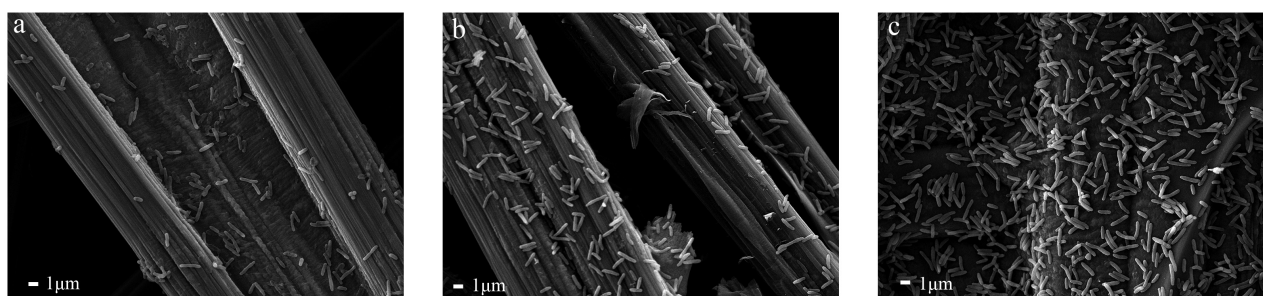
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Fig. S1 Details about the channel configurations of Y-type MMFC (a), S-type MMFC device 1 (b), S-type MMFC device 2 (c) and S-type MMFC device 4 (d).

Fig. S2 Discharging curve of S-type MMFC device 4 for long time operation.

Fig. S3 Growth of bacterial biofilm on the electrode of device 4 at different time. (a, 6 hours; b, 12 hours; c, 24 hours)

Calculation of hydraulic retention time (HRT)

Since the laminar flow zone of the four devices is the same in velocity, density, viscosity and pipe diameter, when the flow rate is 5ml/h. Re= $du\rho/\mu$，Re=1.3

Table S1. According to the formula HRT = V / Q (El Hamouri *et al.*, 2007; Najafpour *et al.*, 2006), the HRT of different devices is calculated.

Type	V	Q	HRT
Device1	$8*10^{-10}m^3$	$5*10^{-7}m^3$	$1.6*10^{-3}$
Device2	$8*10^{-10}m^3$	$5*10^{-7}m^3$	$1.6*10^{-3}$
Device3	$11*10^{-10}m^3$	$5*10^{-7}m^3$	$2.2*10^{-3}$
Device4	$7.2*10^{-10}m^3$	$5*10^{-7}m^3$	$1.44*10^{-3}$

References

El Hamouri, B., Nazih, J., and Lahjouj, J. (2007), Subsurface-horizontal flow constructed wetland for sewage treatment under Moroccan climate conditions. Desalination 215 153-158, doi:https://doi.org/10.1016/j.desal.2006.11.018.

Najafpour, G.D., Zinatizadeh, A.A.L., Mohamed, A.R., Hasnain Isa, M., and Nasrollahzadeh, H. (2006), High-rate anaerobic digestion of palm oil mill effluent in an upflow anaerobic sludge-fixed film bioreactor. Process Biochem 41 370-379, doi:https://doi.org/10.1016/j.procbio.2005.06.031.