SUPPLEMENTARY MATERIAL

Title - Inquisition of Microcystis aeruginosa and Synechocystis Nanowires: Characterization and Modelling

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**Fig. S1 TEM analysis** of (a) *Synechocystis* and (b) *Microcystis aeruginosa* cells interconnected by PLS [For (a), scale bar is 0.5µm while for (b), it is 2µm]. PLS has been shown with black arrow.
**Fig. S2 Multiple sequence alignment** PilA of *Geobacter sulfurreducens* (Accession no. 2M7G), *Synechocystis* sp. (PilA1, Kazusa Cyanobase -sll1694) and *Pseudomonas aeruginosa* (Accession no. 1OQW: A). The marked rectangular area shows conserved N-terminal domain in type IV pili of tested microorganisms.
Fig. S3 TEM analysis of PLS production level in *Synechocystis* subjected to different culture conditions, (a) $\frac{1}{2}$ C, (b) $\frac{1}{4}$ C, (c) C, (d) N+LS and (e)$\frac{1}{4}$ C+LS culture conditions.

For (a)-(d), scale bar is 0.5\(\mu m\) while for (e), it is 1\(\mu m\). PLS has been shown with black arrow.

Please refer Table 1 for description of culture conditions
Fig. S4 TEM analysis of PLS production level in *M. aeruginosa* subjected to different culture conditions, (a) ½ C, (b) ¼ C, (c) C−, (d) ¼ C+LS and (e) C−+LS. (For (a), scale bar is 0.5μm, for (b), (c) and (e), it is 1μm while for (d), it is 2μm). (d) shows bundle of PLS in lower dividing cell. PLS has been shown with black arrow. Please refer Table 1 for description of culture conditions
Fig. S5 TEM analysis of Cyanobacterial PLS. Dense deposits of PLS from (a) *Synechocystis sp.* and (b) *Microcystis aeruginosa* cultures (Scale bar denotes 0.5µm and 1µm, respectively)
**Fig. S6** Current map images of cyanobacterial PLS. Current map image of *Synechocystis* grown in N, $\frac{1}{2}$ C+LS and C+LS at +0.2V [(a), (b) and (c), respectively. The PLS mentioned in Fig. 4c inset, have got shifted downwards in current map image for C+LS; Current map image of *Microcystis aeruginosa* grown in N, N+LS and $\frac{1}{2}$ C+LS at +0.2V [(d), (e) and (f), respectively)
Fig. S7 Representative I-V spectra of PLS associated extracellular material (ECM). The horizontal noisy line suggests that ECM is non-conductive
Fig. S8 Normalized differential conductance (NDC) of cyanobacterial PLS. (a) Comparative NDC spectra of PLS for *Synechocystis* N, ½ C+LS and C+LS; (b) Comparative NDC spectra of PLS for *Microcystis aeruginosa* N, N+LS and ½ C+LS. Potential DOS peaks have been shown with black arrow.