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Electronic Supplementary Information

An eco-friendly ultra-high performance ionic artificial muscle based on poly (2-acrylamido-2-methyl-1-propanesulfonic acid) and carboxylate bacterial cellulose

Fan Wang[a], Jin-Han Jeon[b], Seong-Jun Kim[c], Jong-Oh Park [a,], Sukho Park[a,]**

[a] School of Mechanical Engineering, Chonnam National University, 77 Yongbong-ro, Buk-gu, Gwangju 500-757, Republic of Korea.

[b] Robert Bosch (SEA) Pte Ltd, Research and Technology Center, Asia Pacific (CR/RTC1-AP), 11 Bishan Street 21, Singapore 573943.

[c] Department of Environmental Engineering, Chonnam National University, 77 Yongbong-ro, Buk-gu, Gwangju 500-757, Republic of Korea.

* Corresponding authors: jop@jnu.ac.kr and spark@jnu.ac.kr

Surface view of original BC

Fig. S1 shows the SEM image of original BC, which indicates that BC has the aggregated-entangled fibrous structure, resulting from the strong hydrogen bonding and Van der Waals forces among BC molecules due to the many hydroxyl groups present on BC chains.

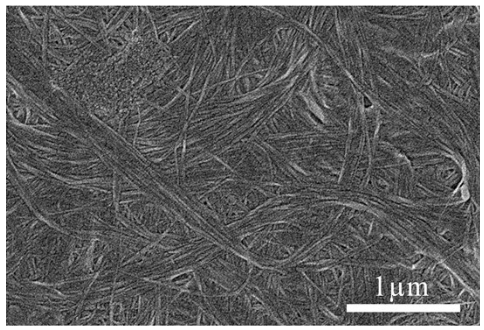

Fig. S1 SEM image of original bacterial cellulose (BC)

Actuation performances

Fig. S2 shows the peak displacements of the CBC-IL-PAMPS (0.1 wt%) biocomposite actuator under various excitation voltages. It is clearly found that the bending performances were significantly affected by the excitation voltages, because the ionic mobility was greatly dependent on the electric field in the composite membrane matrix.

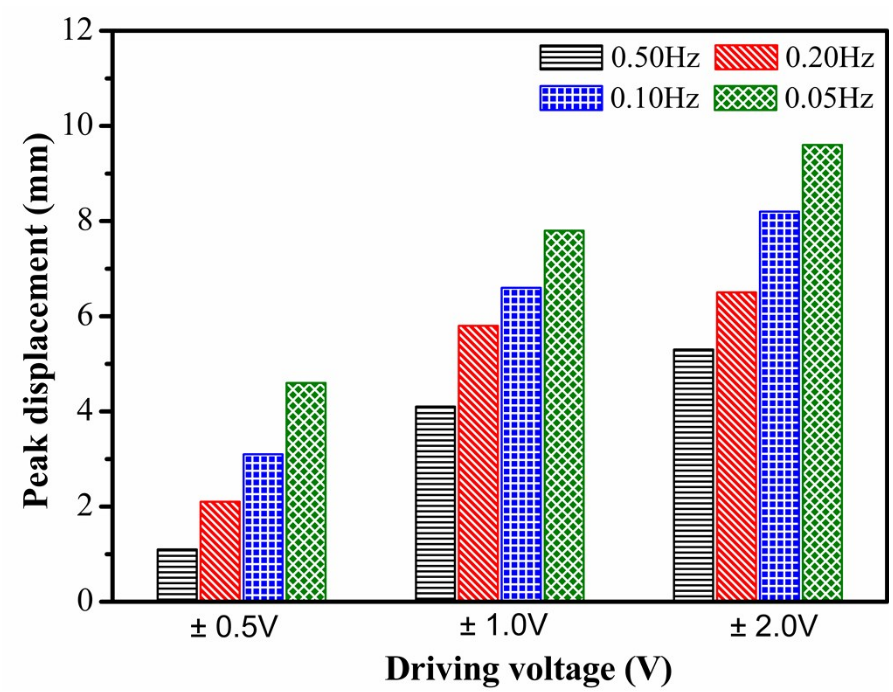

Fig. S2 Peak displacement of the CBC-IL-PAMPS biocomposite actuator under various applied voltages