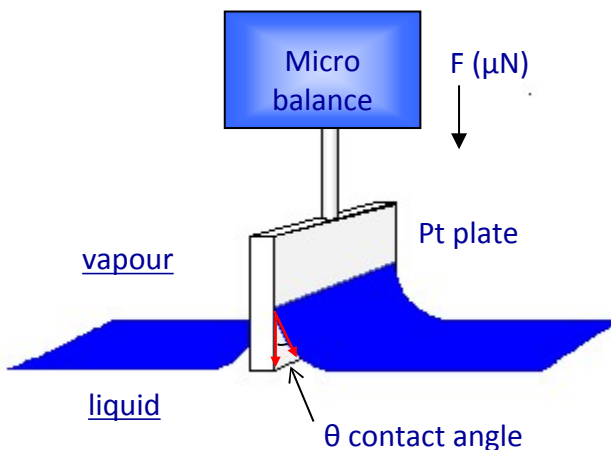


## SUPPLEMENTARY DATA 1

Surface tension measurement of electrospinning solution and bath solution mixture

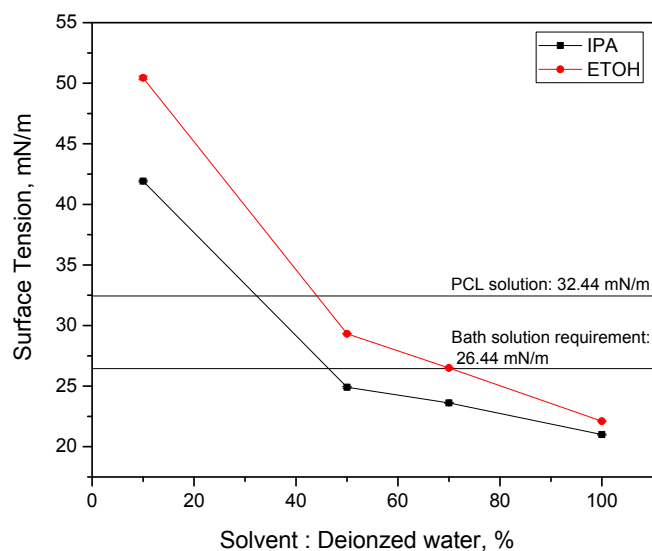


**Figure S1.** Schematic of Wilhelmy plate method

The surface tension of the electrospinning solution and bath solution were measured using the Kruss K100 tensiometer via the Wilhelmy plate method. The Wilhelmy method describes the contact angle between a solid and a liquid as in Equation (1). The wetting force  $F$ , which is also known as the capillary force exerted by the liquid on the solid sample, was recorded by the tensiometer.<sup>1</sup> In order to determine surface tension/energy of the liquid, a Platinum plate was used. Since Platinum has high surface energy and is assumed to perfectly wet most liquids, the contact angle between the Platinum probe and the test liquid sample is zero, hence  $\cos \theta$  is 1. The wetted length  $L$  of the plate is equal to its perimeter. Therefore, with the measured wetting force  $F$ , the surface tension of test liquid can be calculated according to the Equation (1)

$$\sigma = \frac{F}{L \cdot \cos \theta}$$

Equation (1)



**Figure S2.** Surface tension of bath solution mixtures with various content of deionized water (the solvent analyzed include isopropyl alcohol (IPA) and ethanol (ETOH)) Electrospinning solution (PCL) is presented for comparison.

From the surface tension measurements, the electrospinning solution, 13 w/v% of PCL in 6.5:3.5 ratio of dichloromethane (DCM) and dimethylformamide (DMF) has a surface tension of 32.44 mN/m. In order to have a good infiltration of the polymer solution into the bath solution for creating a porous scaffold, the bath solution should have lower surface tension than that of the polymer solution. Fig S2 shows the relationship between surface tension of bath solutions with the content of deionized water in the solutions. From our observation, bath solution has to be in the regime of 6 to 9 mN/m lower than the electrospinning solution. For this instance, the bath solution requirement would be 26.44 mN/m. Having considered the flammability of using

high concentration of solvent in our experiment, we proposed the use of 50% IPA in deionized water suitable for the wet electrospinning process.

### **References**

1 L. Q. N. Tran, C. A. Fuentes, I. Verpoest and A. W. Van Vuure, in *Natural Fiber Composites*, ed. R. D. S. G. Campilho, Taylor & Francis Group, 2016, ch. 5, pp. 127–155.