Supplementary Material (ESI) for *Soft Matter*


# Supplementary Information

**for**

## Conducting bio-materials based on gellan gum hydrogels

Cameron J. Ferris, Marc in het Panhuis*

*School of Chemistry and Intelligent Polymer Research Institute, University of Wollongong, Northfields Ave, Wollongong, NSW 2522, Australia*

*Corresponding author. E-mail: panhuis@uow.edu.au; Tel: +61 24221 3155

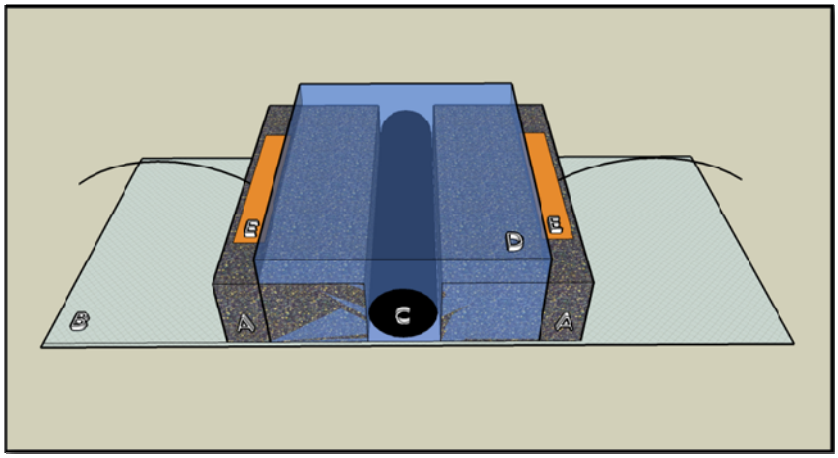


**Fig. S1** Electrical testing substrate consisting of two highly porous reticulated vitreous carbon (RVC) electrodes (A) fixed to a glass substrate (B) and separated by an insulating spacer (C). A hydrogel (D) is set so that it makes intimate contact with both RVC electrodes. Connections to electrical characterisation equipment is made through wires attached to the RVC electrodes with copper contacts (E).

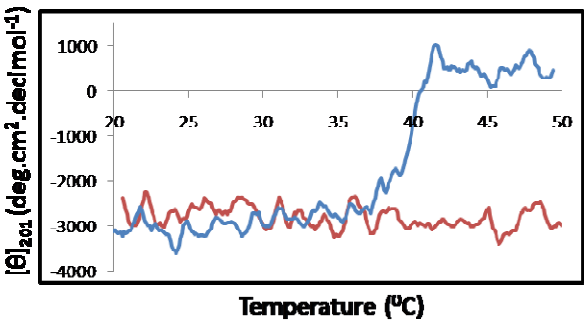


**Fig. S2.** Circular dichroism temperature scan at a fixed wavelength of 201nm and a scan rate of $5^0$C/min for a 1:1 mixture of a 1% w/v gellan solution with Dulbecco's Modified Eagles Medium (GZ0.5-DMEM). Both cooling (blue) and heating (red) curves are displayed.

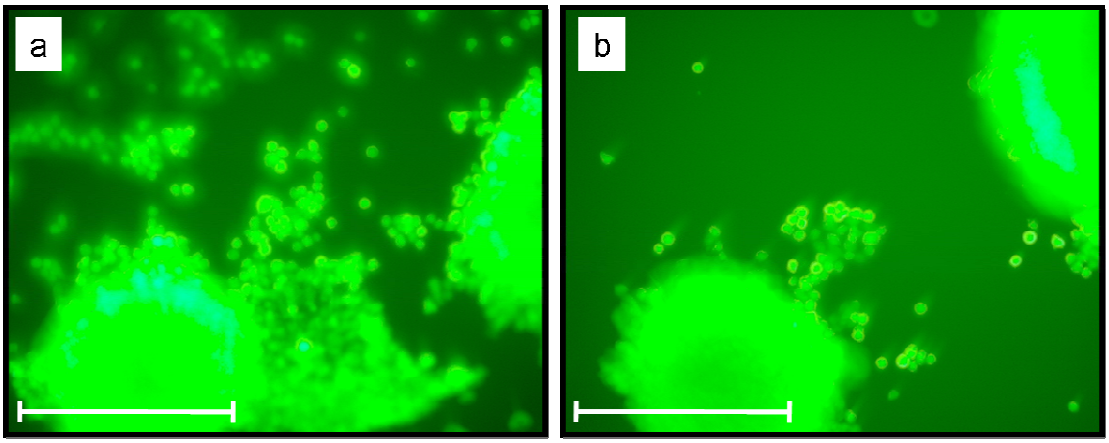


**Fig. S3.** Microscopy images of cells growing on non-optimal hydrogels. **(**a) Fluorescent microscopy images of adherent L-929 cells growing on a hydrogel (gellan gum = 1.0 % w/v, $Ca^{2+}$ = 10 mM) after 3 days of culture; (b) Fluorescent microscopy image of cells growing on a hydrogel (gellan gum = 1.5% w/v, $Ca^{2+}$ = 10 mM) after 3 days of culture. Scale bars = 100 μm.

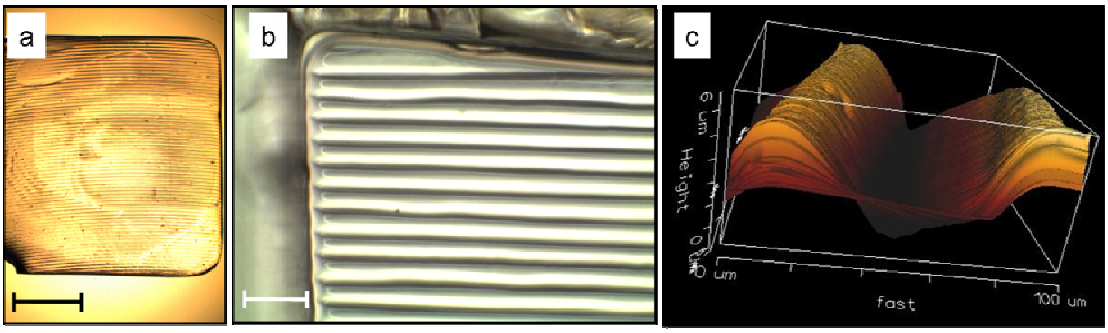


**Fig. S4.** Microscopy images of aligned topographical features incorporated into a hydrogel by moulding with a vinyl record substrate. (a) Optical microscopy image of a typical hydrogel moulded by a vinyl record substrate "VR1". Scale bar = 5,000 μm; (b) enlarged view of image a. Scale bar = 200 μm; (c) Atomic force microscopy 3D image of the hydrogel topography.