

## Supporting Information

### **Photo-polymerisable electrospun fibres of *N*-methacrylate glycol chitosan for biomedical applications**

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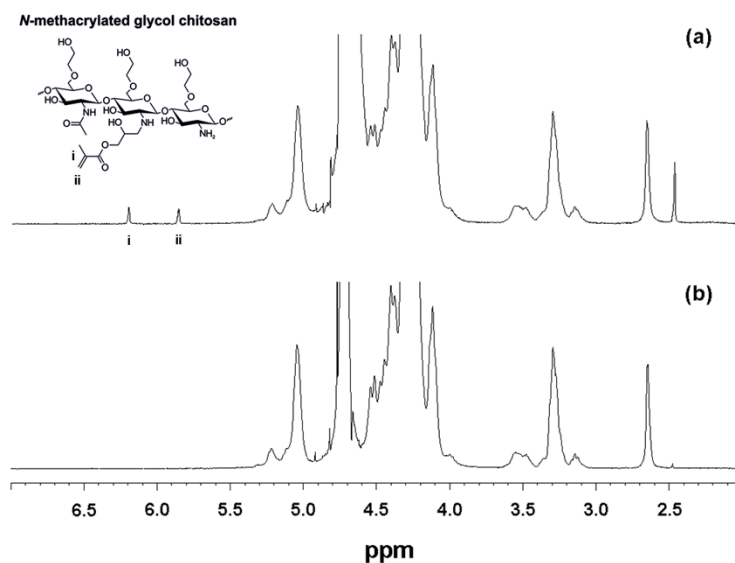
### NMR characterisation

The degree of methacrylation of the synthesised *N*-methacrylate glycol chitosan (MGC) was determined by nuclear magnetic resonance (NMR) spectroscopy. In Figure S1, the comparison between the  $^1\text{H}$  NMR spectra of MGC (Fig. S1a) and glycol chitosan (Fig. S1b) is shown.

The peaks characteristics of the methacrylation are visible in the spectrum of MGC at 5.85 and 6.20 ppm (protons of the vinyl carbon) and at 2.45 ppm (methyl group of the methacrylate). From this analysis it is possible to calculate the degree of substitution (DOS), which is the number of grafted methacrylate groups per 100 residues, we used the following equation:<sup>1</sup>

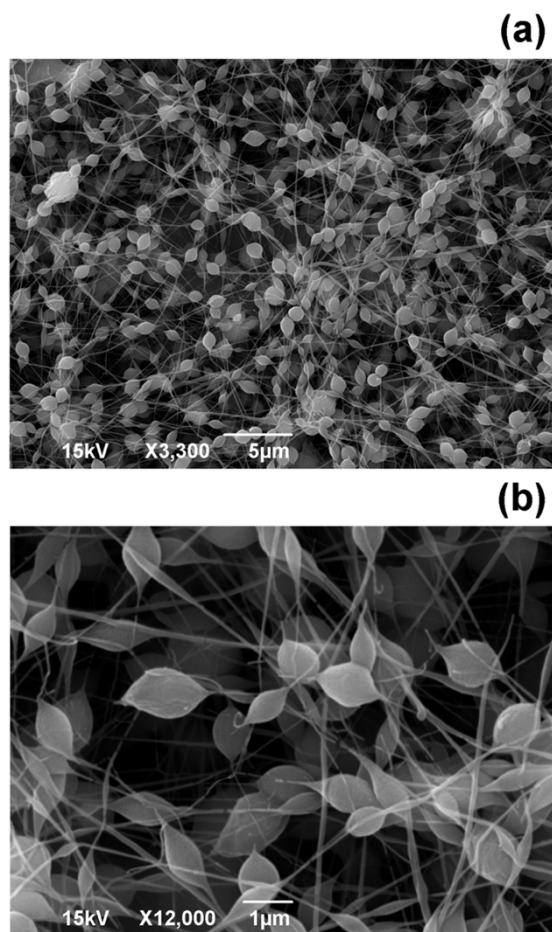
$$DOS = \frac{(I_{5.85} + I_{6.20})/2}{I_{5.05} + I_{5.20}} \times 100$$

where  $I_{5.85}$ ,  $I_{5.60}$ ,  $I_{5.05}$  and  $I_{5.20}$  represent the areas of the bands at 5.85, 5.60, 5.05, and 5.20 ppm, respectively. For the synthesised MGC, DOS is 3%.

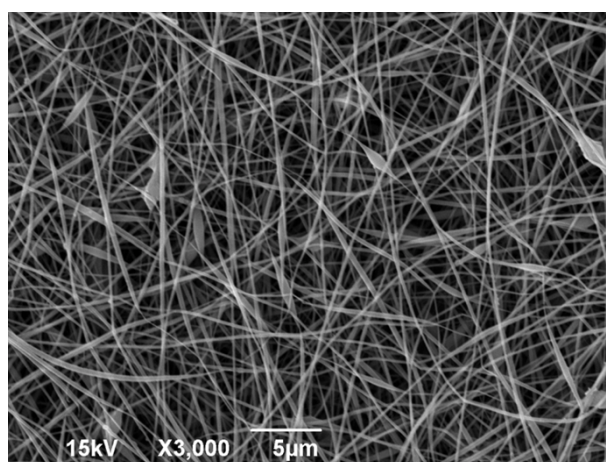


**Figure S1:**  $^1\text{H}$  NMR spectra of (a) MGC and (b) glycol chitosan. Inset: chemical structure of MGC, where *i* and *ii* represent the vinyl carbon protons involved in the methacrylation.

*Morphological characterisation*

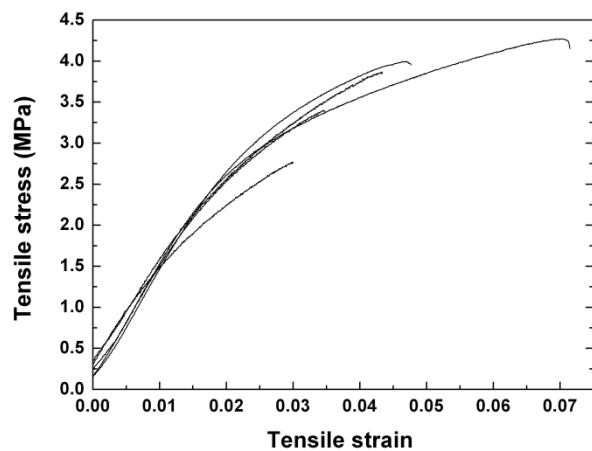


**Figure S2:** SEM images at (a) low and (b) high magnification of the structures obtained by electrospinning MGC with a 7% of DOS.

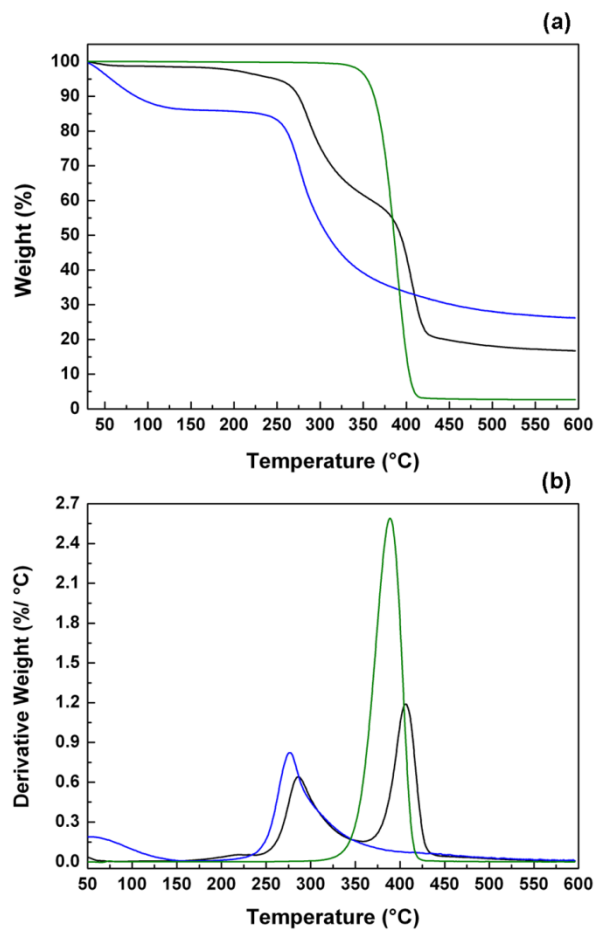


**Figure S3:** SEM image of the electrospun MGC fibres before the UV irradiation.

*Mechanical and thermal analyses*

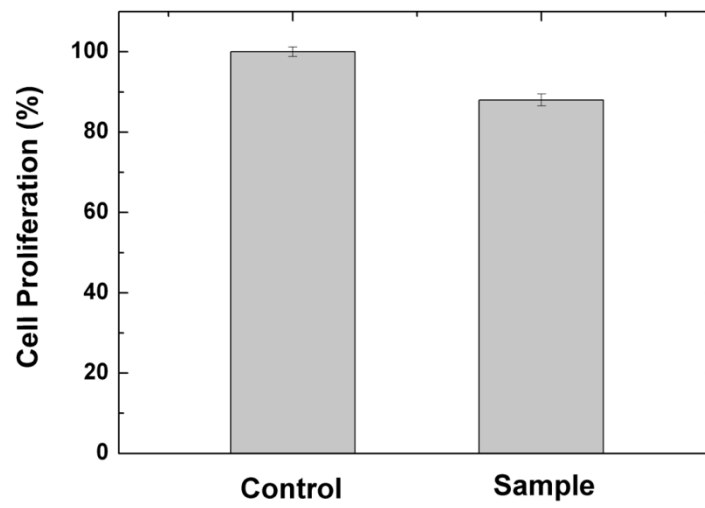


**Figure S4:** Tensile stress-strain curves of the electrospun MGC/PEO mats.



**Figure S5:** (a) TGA thermogram and (b) relative derivative curve of the MGC/PEO electrospun fibres (black curve), the pure MGC (blue curve) and the pure PEO (green curve).

*Biocompatibility assay*



**Figure S6:** MTT assay for fibroblast cells proliferated on tissue culture polystyrene plates by using fresh culture medium (control) and the extraction one (sample).