Supporting information

Engineered CuO-GO Reinforced PVA/CS Electrospun Nanofibers with Enhanced Physicochemical, Hemocompatible, and Wound Healing Performance

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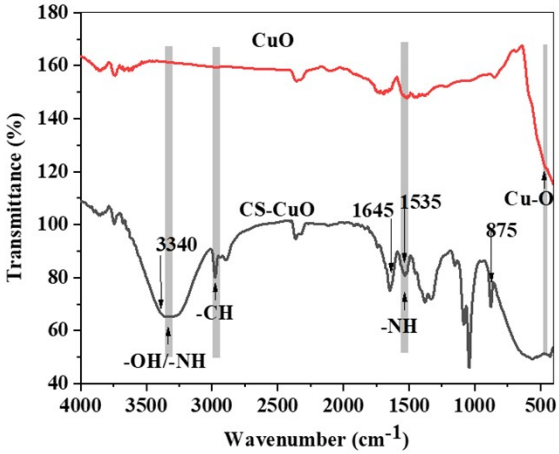


Figure S1. The ATR-FTIR spectra of chitosan-capped CuO and CuO NPs show that the organic groups of CS were decomposed during calcination at 600 °C for 4 h.

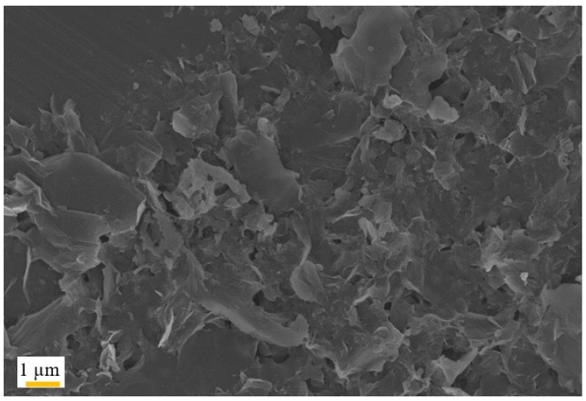


Figure S2. SEM images of GO flakes

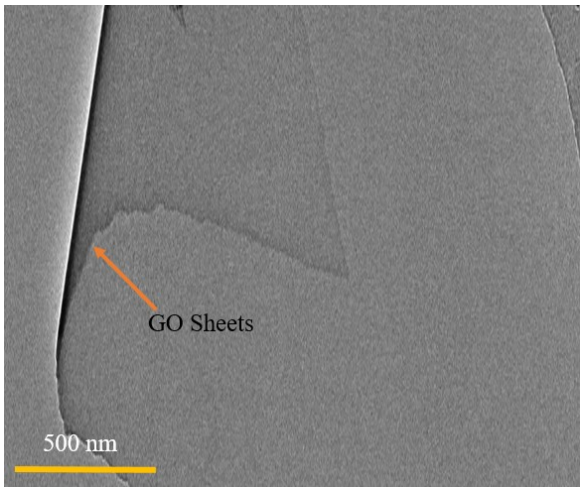


Figure S3. TEM images of GO sheets

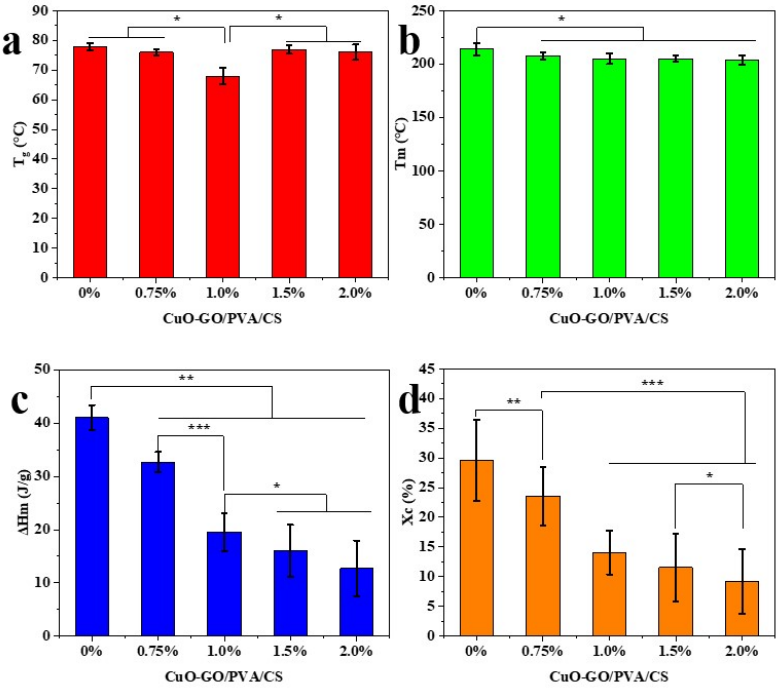


Figure S4. Figure. (a) glass transition temperature (Tg), (b) melting temperature (Tm), (c) enthalpy of melting (ΔHm), and (d) degree of crystallinity (Xc) as determined from DSC measurements. Data are presented as mean ± standard deviation, and statistical significance was evaluated by appropriate comparative analysis between groups. Statistical differences are denoted as $p < 0.05$ (*), $p < 0.01$ (**), and $p < 0.001$ (***).

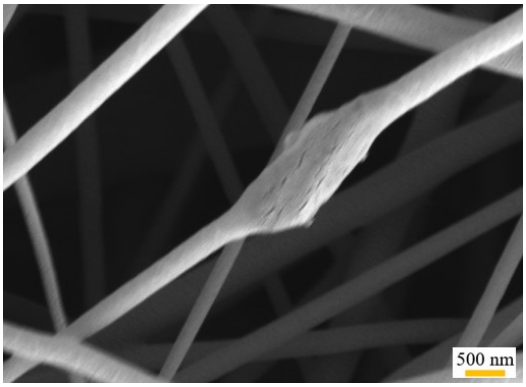
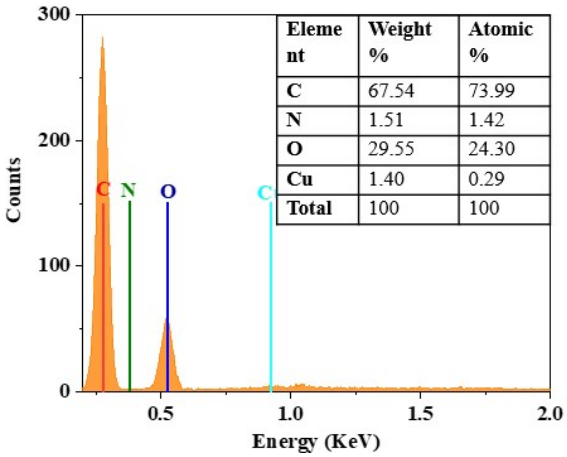


Figure S5. Cropped SEM micrograph of the electrospun nanofiber highlighting the porous region where CuO–GO nanocomposites are embedded; scale bar retained from figure 5c1, the yellow arrow highlights the nanofiber roughening as a result of lodged CuO-GO NCs.



Element	Weight %	Atomic %
C	67.54	73.99
N	1.51	1.42
O	29.55	24.30
Cu	1.40	0.29
Total	100	100

Figure S6. EDX of the 2 wt.% CuO-GO incorporated PVA/CS nanofibrous mat, the inset table shows the elemental composition.

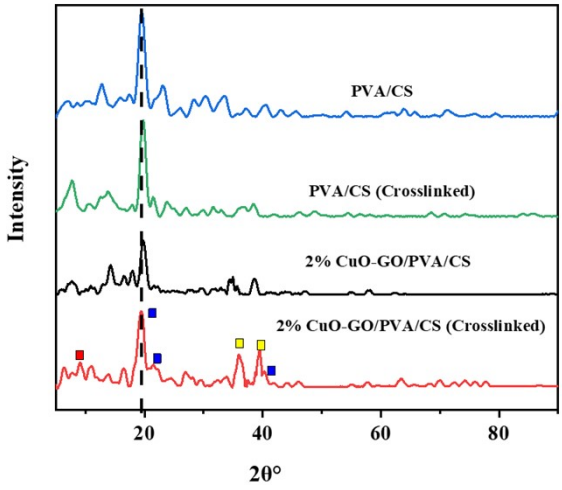


Figure S7. X-ray diffraction (XRD) patterns of PVA/CS, crosslinked PVA/CS, 2 wt% CuO–GO/PVA/CS, and crosslinked 2 wt% CuO–GO/PVA/CS composite mats. The dashed line highlights the dominant diffraction region around 2θ ≈ 19–20°, arising from overlapping crystalline contributions of PVA and chitosan. Characteristic reflections of CuO are indicated by yellow squares, the main PVA-related

diffraction by blue squares, and the GO-related diffraction by red squares, confirming the successful incorporation of CuO–GO within the PVA/CS matrix and the effect of crosslinking on the overall crystalline ordering.

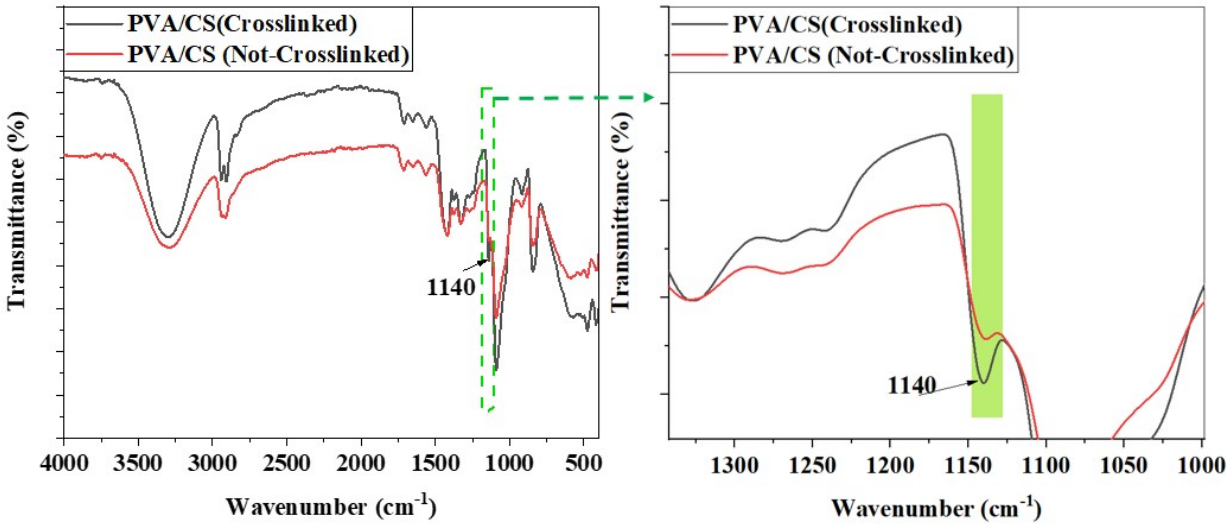


Figure S8. FTIR spectra of PVA/CS nanofibers (a) uncrosslinked (b) crosslinked

Table S1. Comparison to other wound healing concepts and if there is really a gain, or simply another material.

	Key Components	Crosslinking Technique	Tensile Strength	Wound Closure (%)	Ref
1	PVA/GO nanofibers	Glutaraldehyde	2.0 → 5.17 MPa	>90% at day 9	(1)
2	PVA/Iota carrageenan/GO	-	3 ± 0.01 MPa	100% at day 21	(2)
3	PVA/CS/GO/ TiO_2/CQD	glutaraldehyde	3.8 → 9.0 MPa	93.137 % at day 14	(3)
4	Manuka honey/ PVP/Chitosan/titanate	-	-	100% at day 12	(4)

5	PVA/gelatin	Citric acid crosslinked	10.28 → 7.76 MPa	>94% at day 14	(5)
6	PVA/CS	-	8·9 → 1·5 MPa	98% at day 10	(6)
7	Ursolic acid/ CS/PVA	-	-	99.8% at day 18	(7)
8	Curcumin/carbon nanospheres/ PVA	-	-	99% at day 14	(8)
9	PVA/PEO/L-Arg/Zn-MOF	-	23.33 → 37.99 N	100% at day 21	(9)
10	ZnO/CS/PVA	-	-	90.5% at day 12	(10)
11	CuO-GO/PVA/CS	Thermal	2.5 → 7.8 MPa	100% at day 14	

References:

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