Electronic Supplementary Material (ESI) for Journal of Materials Chemistry B.

Supplementary Information

Introducing Photo-crosslinked Bio-Nanocomposites based on Polyvinylidene fluoride /Poly(glycerol azelaic acid)-*g*-Glycidyl methacrylate for Bone Tissue Engineering

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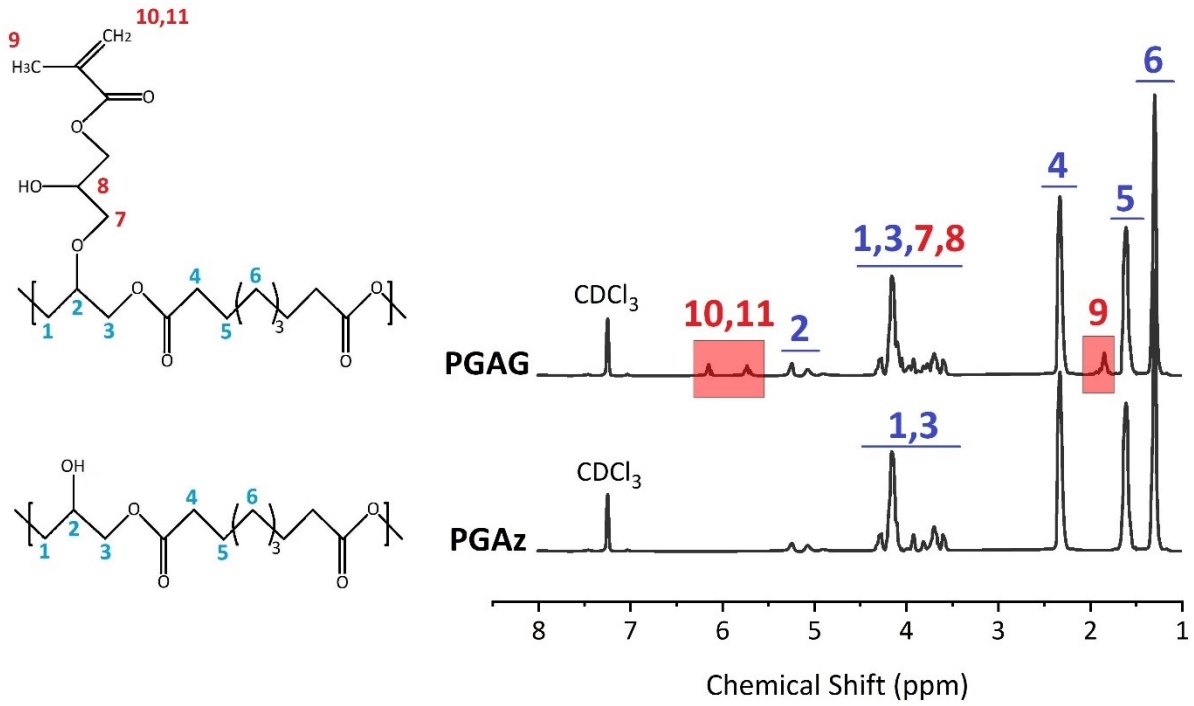

Figure S1. ^{1}H NMR spectrum of PGAz and PGAG.

Table S1. Thermal parameters of the prepared samples evaluated from the cooling and second heating DSC curves.

Sample	T_g (°C) [PGAG]	Tg (°C) [PVDF]	T_m Peak (°C) [PVDF]	T_m Range (°C) [PVDF]	ΔH_m (J/g) [PVDF]	X_c (%) [PVDF]	T_c Peak (°C) [PVDF]	T_c Range (°C) [PVDF]
PGAG	-23.3	-	-	-	-	-	-	-
PVDF	-	-32.6	169.9	157.4 to 178.0	64.2	61.4	140.0	150.3 to 116.9
PGAG/PVDF	-	-	165.7	151.7 to 172.4	27.6	52.8	136.5	143.6 to 113.8
PGAG/PVDF/nHA	-	-	167.3	156.9 to 174.8	29.8	58.8	138.3	145.4 to 122.5
PGAG/PVDF/Clay	-	-	167.3	153.8 to 172.3	28.7	56.6	138.0	147.9 to 124.9
PGAG/PVDF/Hybrid	-	-	167.5	155.7 to 175.3	30.1	59.4	138.6	145.0 to 129.1

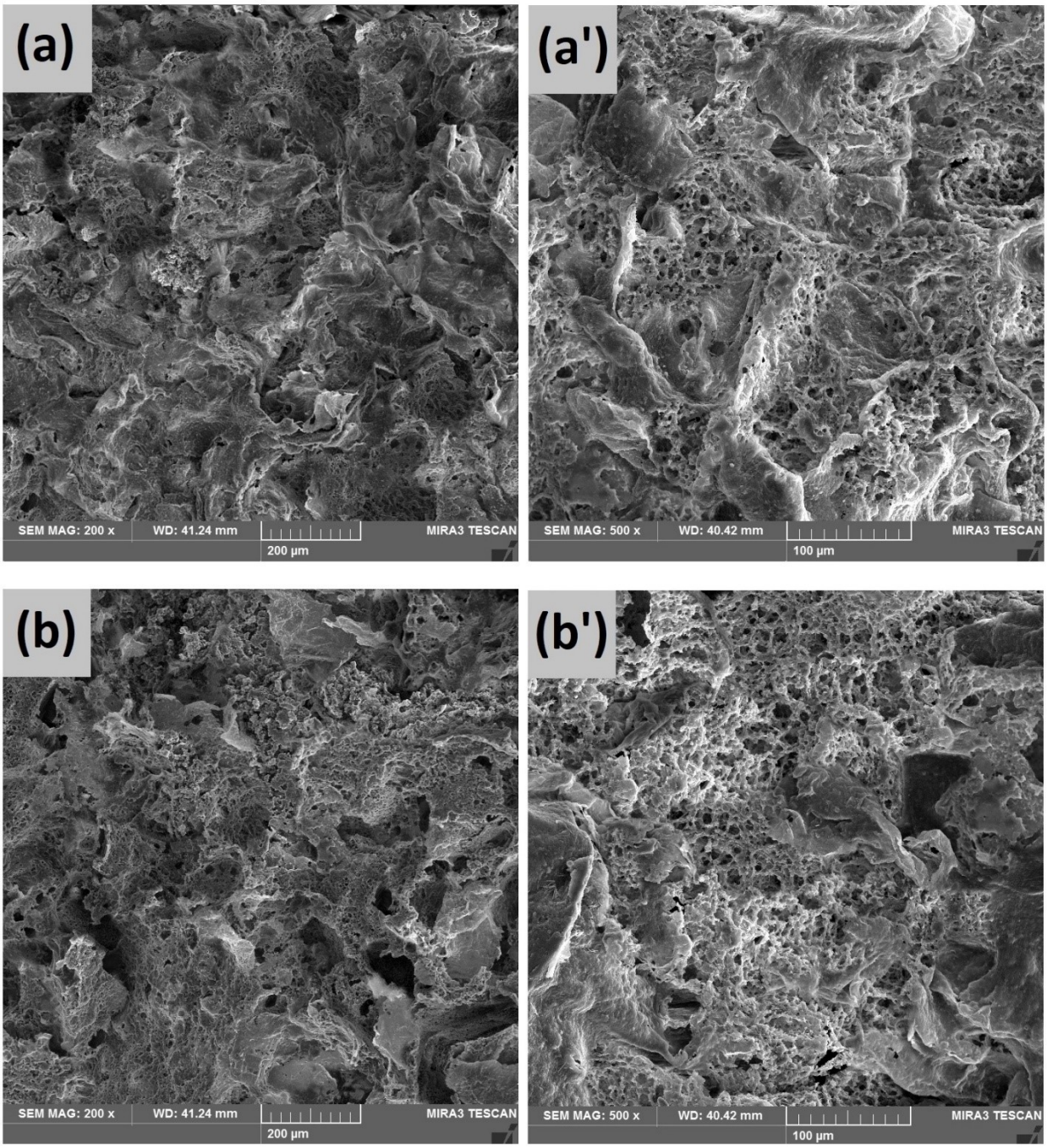

Figure S2. SEM images of cross-sectional surfaces of (**a,a'**) PGAG/PVDF/nHA and (**b,b'**) PGAG/PVDF/Clay.

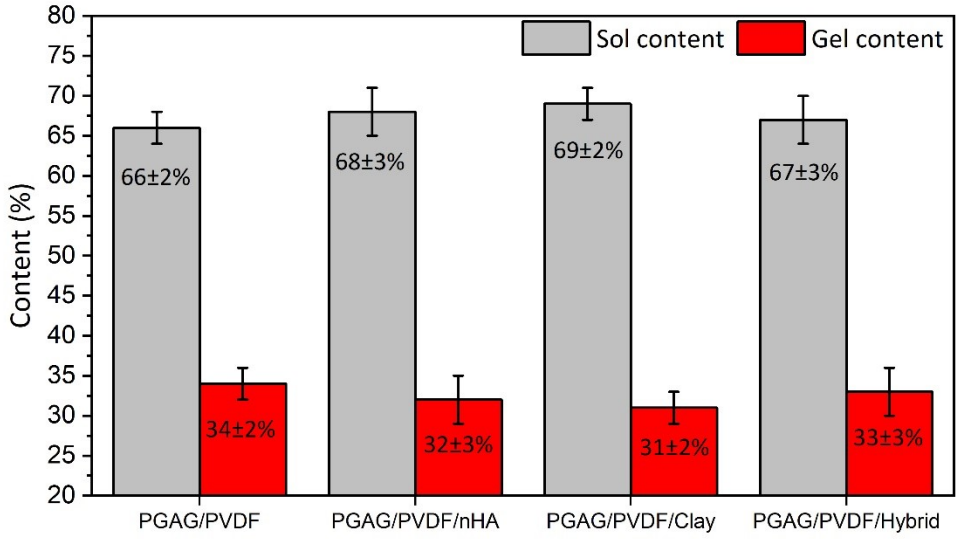

Figure S3. Calculated sol-gel content of the scaffolds normalized based on the weight fraction of PGAG in the blends (50%).

Table S2. Mechanical properties of the prepared scaffolds.

Condition	Sample	E (MPa)	TS at Yield point (MPa)	UTS (MPa)	ε_b (%)
As prepared	PGAG	1.8±0.1	-	0.95±0.04	85.0±2.0
	PVDF	268.3±2.0	-	22.0±0.1	22.4±1.0
	PGAG/PVDF	15.7±0.5	4.3±0.1	14.2±0.1	61.2±1.5
	PGAG/PVDF/nHA	17.3±0.7	5.2±0.1	13.9±0.1	57.5±2.0
	PGAG/PVDF/Clay	23.8±0.6	4.9±0.1	14.2±0.1	54.0±2.0
	PGAG/PVDF/Hybrid	20.2±0.9	5.7±0.2	14.6±0.2	54.9±1.5
After Hydrolytic Degradation	PGAG/PVDF	10.5±0.7	2.5±0.3	7.7±0.3	38.8±3.0
	PGAG/PVDF/nHA	13.7±0.9	3.0±0.4	7.9±0.5	37.7±2.5
	PGAG/PVDF/Clay	20.6±1.0	3.4±0.4	8.6±0.4	35.5±3.0
	PGAG/PVDF/Hybrid	17.8±1.3	3.1±0.6	8.3±0.6	34.4±2.8

*E - Young's modulus

*UTS - ultimate tensile strength

*εb - Elongation at break

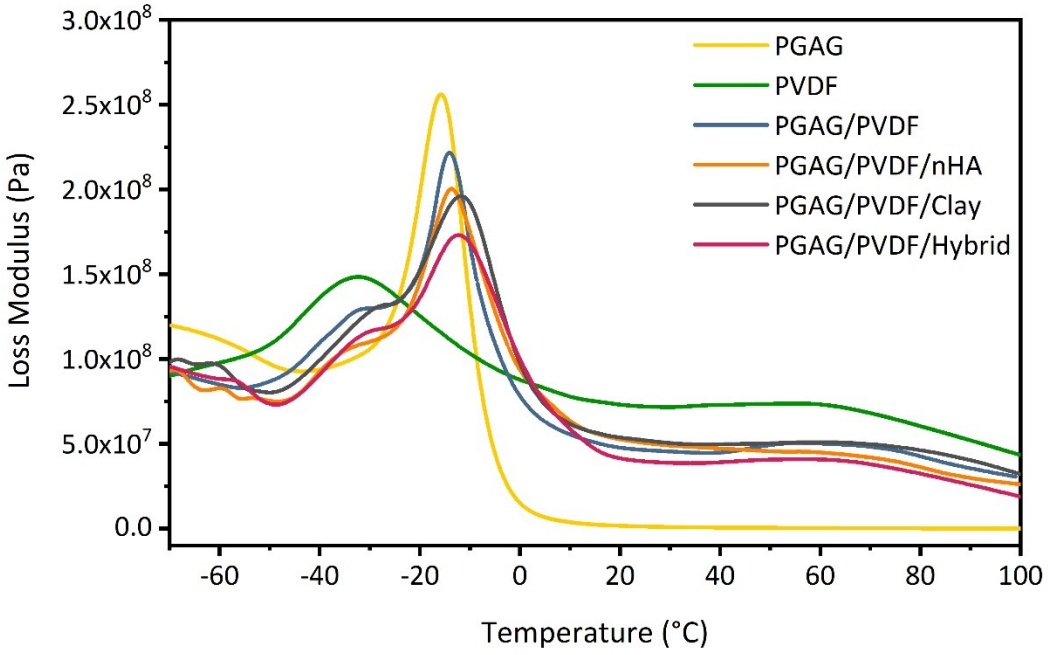

Figure S4. Loss modulus (E") of raw PVDF, PGAG, their blend and corresponding nanocomposites.

Table S3. Weight loss of the samples during the *in-vitro* degradation within the PBS and PBS+ Lipase enzyme solutions (30 days, 37°C, PH 7.4).

Sample	Weight Loss (%)	
	PBS enzyme-free	PBS enzyme-containing
PGAG/PVDF	7.1±0.3	22.1±1.3
PGAG/PVDF/nHA	8.1±0.3	26.8±1.5
PGAG/PVDF/Clay	7.6±0.3	24.4±1.3
PGAG/PVDF/Hybrid	8.3±0.2	27.4±1.4

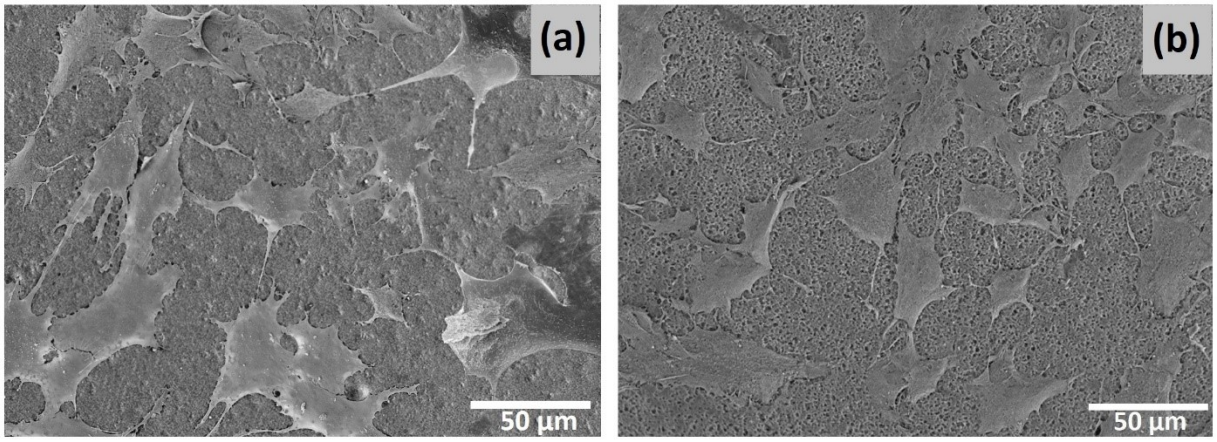

Figure S5. SEM images showing the morphology of L929 cells seeded on (**a**) TCP as the control group and (**b**) PGAG/PVDF/Hybrid film after 10 days of cell seeding. As shown, normal morphology and shape for mouse fibroblast cells can be seen on day 10.