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Mechanically robust and flexible PEGylated poly(glycerol sebacate)/β-TCP nanoparticles composite membrane for guided bone regeneration

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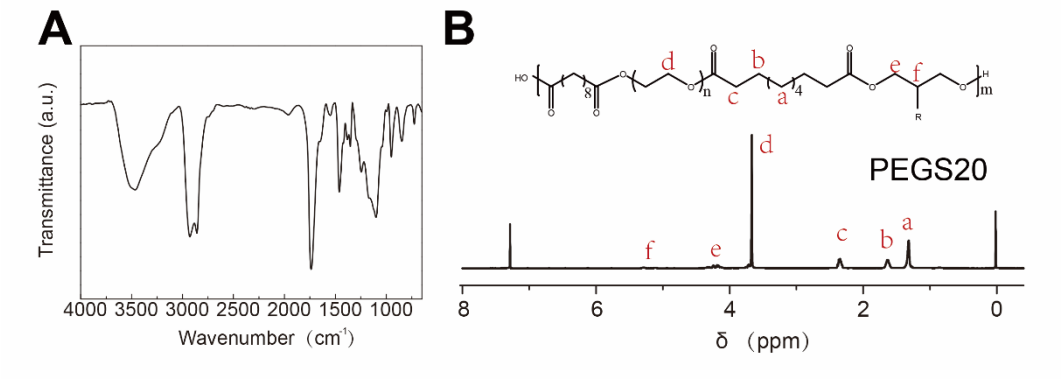

Fig. S1 (A) ^{1}H-NMR spectra and (B) FITR spectra of PEGS20 prepolymer.

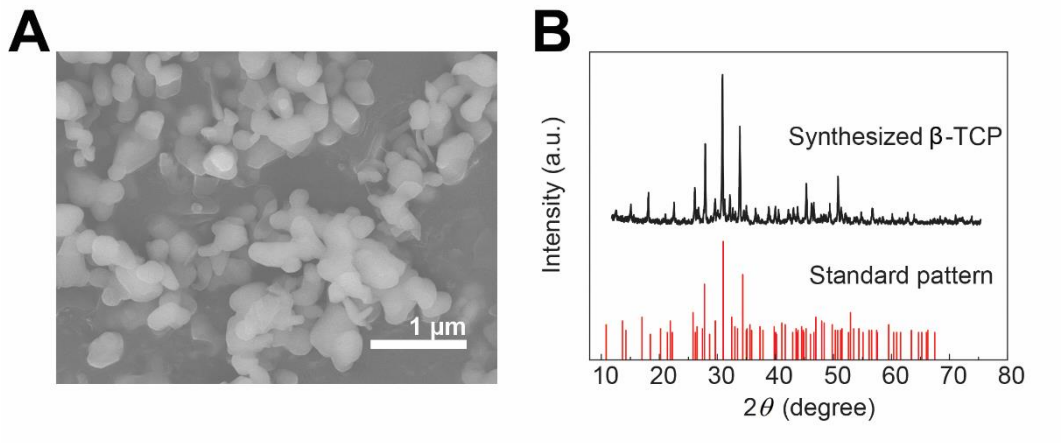

Fig. S2 (A) SEM image (scale bar: 1 μm) and (B) XRD pattern of β-TCP.

Table. S1 Quantitative analysis of EDS spectrum.

Element	unn.C [wt.%]			norm.C [wt.%]			Atom.C [at.%]		
	P20T10	P20T50	P20T90	P20T10	P20T50	P20T90	P20T10	P20T50	P20T90
Calcium	1.91	11.30	26.95	65.32	67.87	69.71	59.28	59.28	62.01
Phosphorus	1.01	5.35	11.71	34.68	32.13	30.29	40.72	40.72	37.09
Total	2.92	16.65	38.66	100.00	100.00	100.00	100.00	100.00	100.00

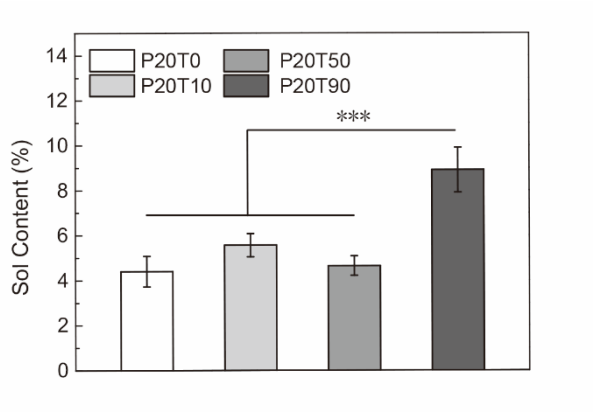

Fig. S3 The sol content of PEGS/β-TCP composite membranes after immersion in THF for 3 days (n = 3, ***p < 0.001).

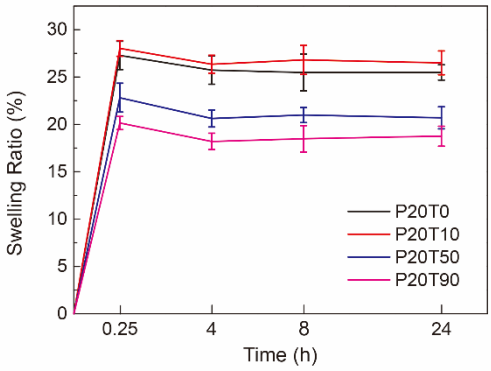

Fig. S4 Swelling behavior of PEGS/β-TCP composite membranes in PBS.

The variation of pH value and Ca^{2+} release during cell cultivation were also studied in vitro. In brief, membrane samples were immersed in cell culture medium (α-MEM, HyClone™, USA) and placed in a constant temperature incubator shaker (37 °C, 80 RPM). At different time points, the pH value of culture medium was measured by pH meter (FE20, Mettler Toledo, Switzerland) and Ca^{2+} release was analyzed by inductively coupled plasma atomic emission spectrometer (ICP-AES, Varian 710-ES, Agilent, USA). The medium was refreshed every 2 days in accordance with the renewal of culture medium for in vitro cell culture.

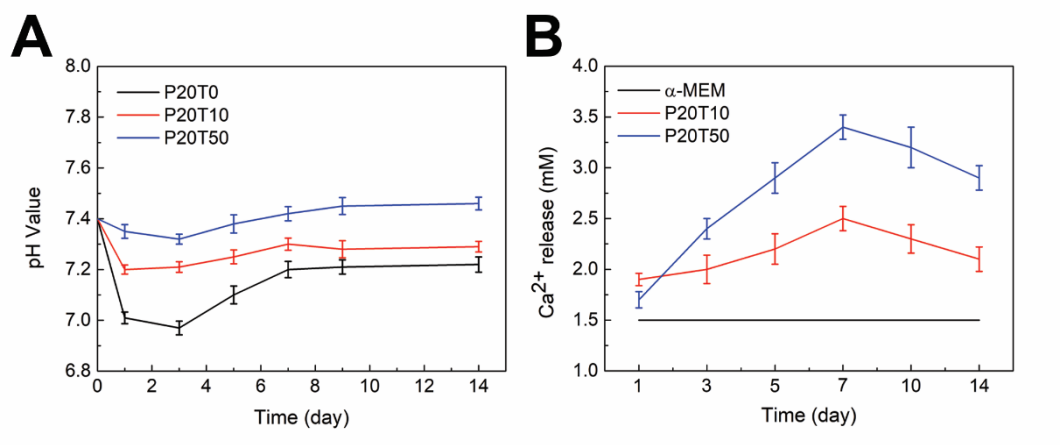

Fig. S5 (A) Change of pH value in culture medium after soaking the PEGS/β-TCP composite membranes for 14 days with medium refreshed every 2 days. Neutralization effect was enhanced with the increase of β-TCP content. (B) Concentration of calcium ions released from the PEGS/β-TCP composite membranes for 14 days with medium refreshed every 2 days. The maximum dose could be detected in P20T50 group.