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Supplementary Content

Fabrication, structure and properties of three-dimensional biodegradable poly(glycerol sebacate urethane) scaffolds

Martin Frydrych and Biqiong Chen*

Department of Materials Science and Engineering, University of Sheffield, Mappin Street, Sheffield, S1 3JD, United Kingdom.

**To whom correspondence should be addressed.*

Fax: +44 (0) 114 222 5943

Tel: +44 (0) 114 222 5958

E-Mail: biqiong.chen@sheffield.ac.uk

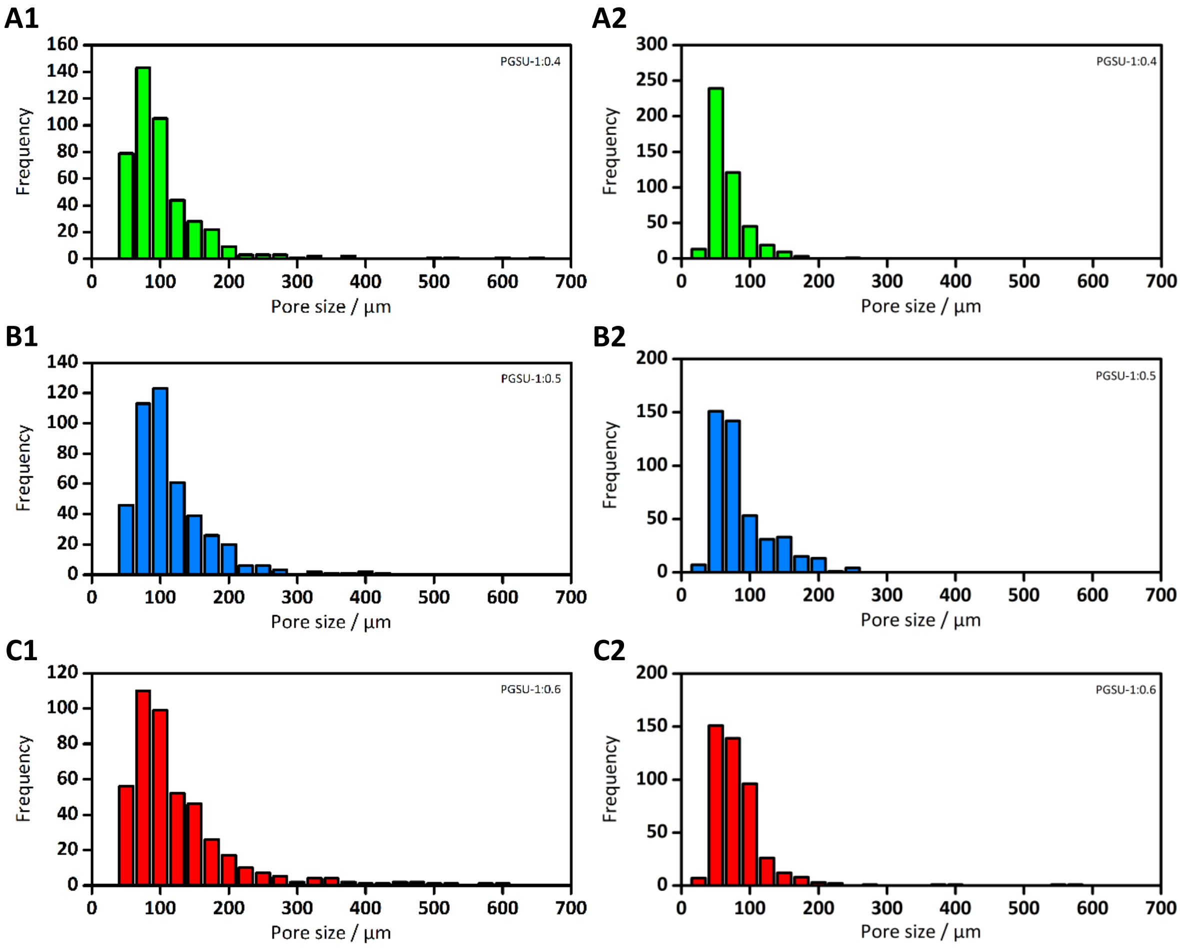

Figure S1. Histograms of the pore size distribution of as-prepared ((A1): PGSU-1:0.4, (B1): PGSU-1:0.5, (C1): PGSU-1:0.6) and cleaned and dry ((A2): PGSU-1:0.4, (B2): PGSU-1:0.5, (C2): PGSU-1:0.6) scaffold samples (n = 450).

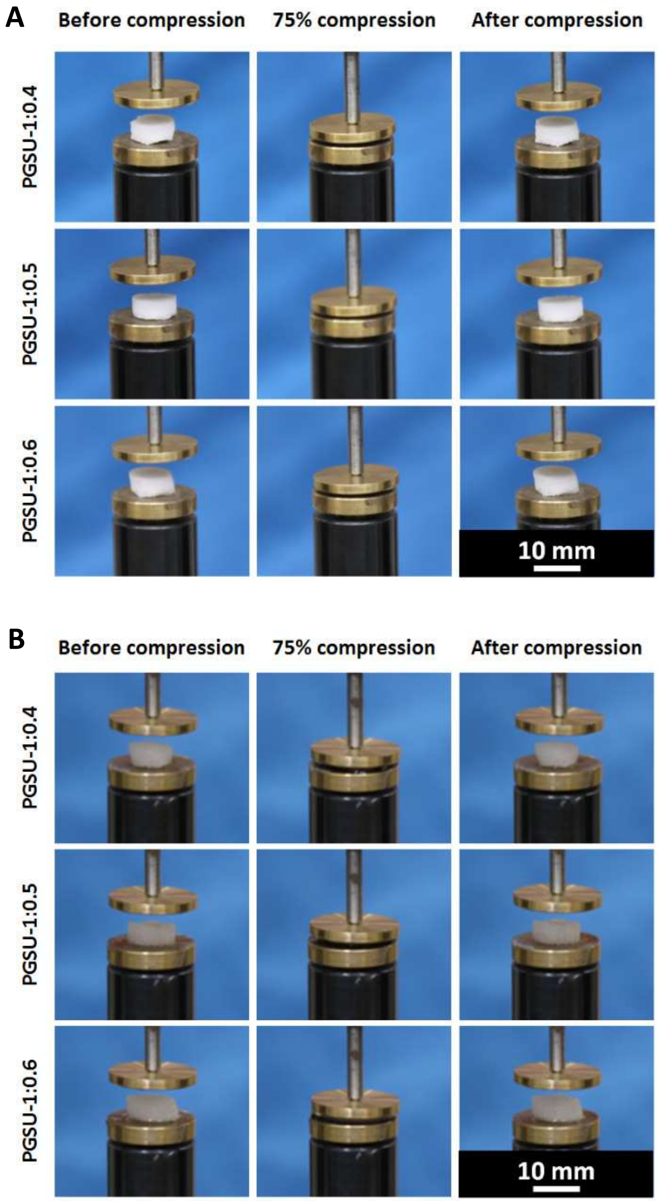

Figure S2. Images of the compressive behaviour of (A) dry and (B) hydrated PGSU scaffolds (24 h immersion in PBS solution at 37 °C and pH 7.4), illustrating the shape restorability to the original shape after releasing compression load.

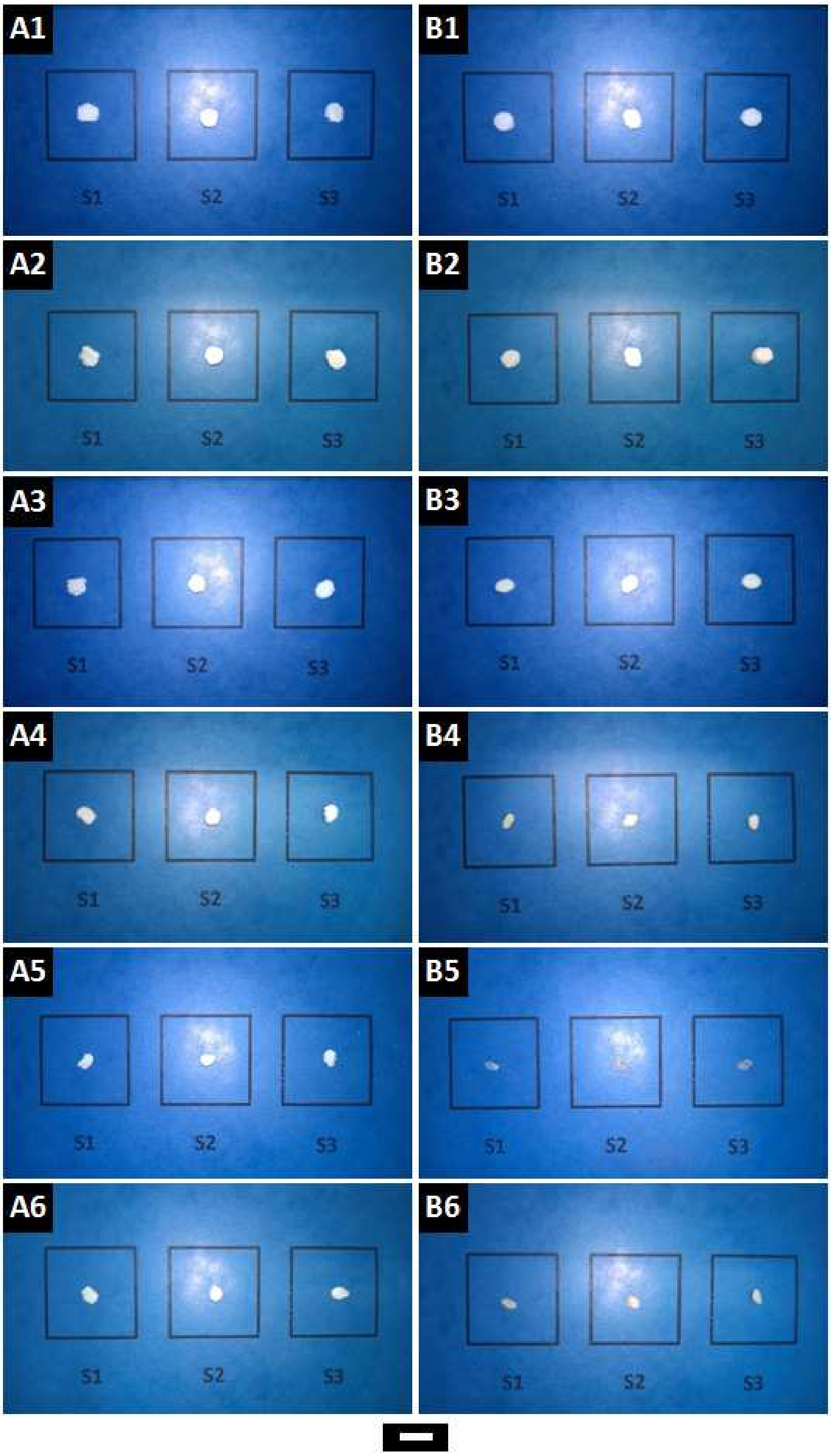

Figure S3. Pictures of PGSU-1:0.4 scaffold samples during incubation in PBS solution ((A1): Day 0; (A2): Day 7; (A3): Day 28; (A4): Day 56; (A5): Day 84; (A6): Day 112), and in PBS solution with the addition of lipase enzyme ((B1): Day 0; (B2): Day 7; (B3): Day 28; (B4): Day 56; (B5): Day 84; (B6): Day 112) under dynamic conditions for up to 112 days at 37 °C (scale bar: 1 cm), showing the degradation behaviour of the PGSU-1:0.4 scaffolds samples over time.

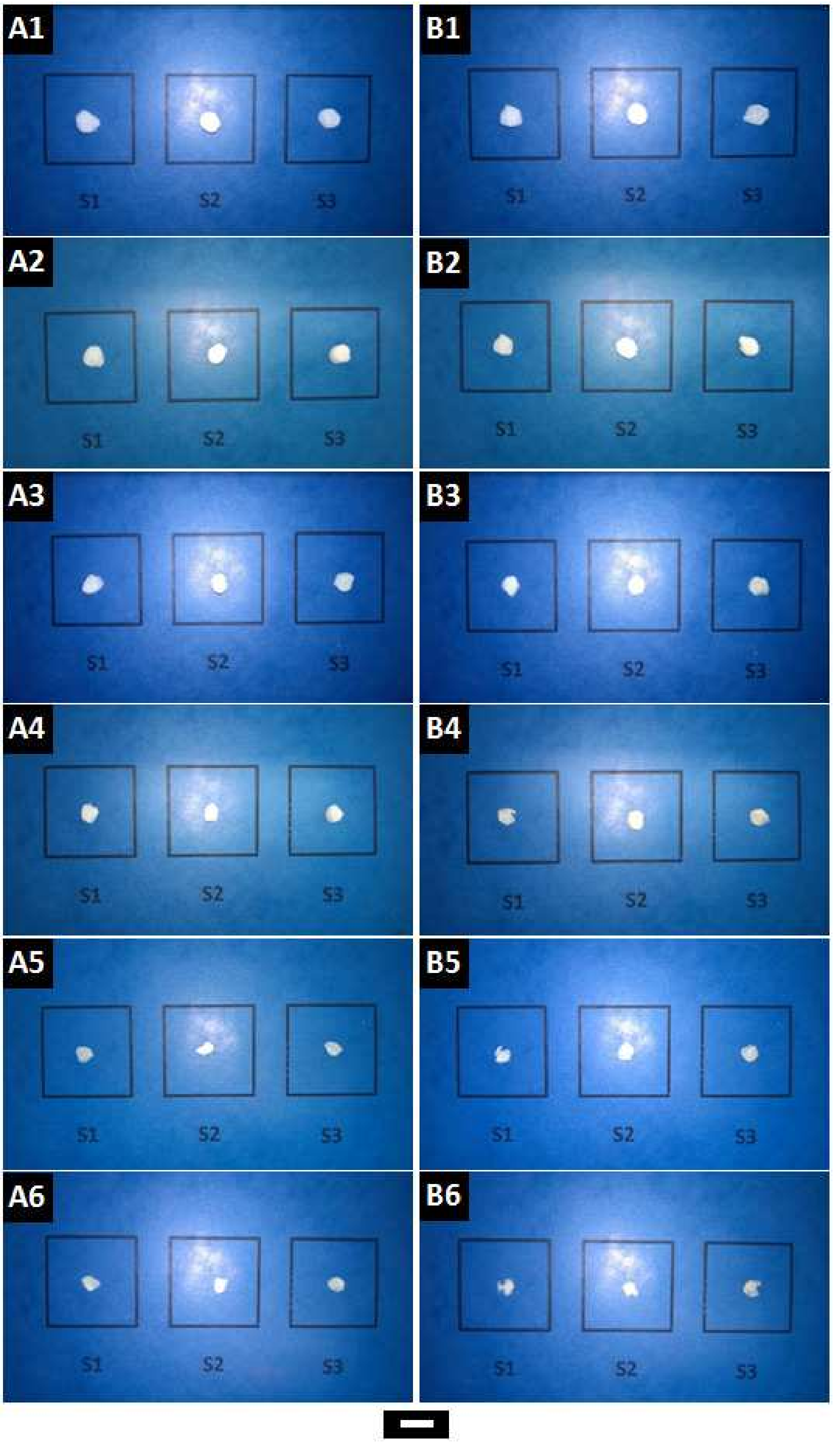

Figure S4. Pictures of PGSU-1:0.5 scaffold samples during incubation in PBS solution ((A1): Day 0; (A2): Day 7; (A3): Day 28; (A4): Day 56; (A5): Day 84; (A6): Day 112), and in PBS solution with the addition of lipase enzyme ((B1): Day 0; (B2): Day 7; (B3): Day 28; (B4): Day 56; (B5): Day 84; (B6): Day 112) under dynamic conditions for up to 112 days at 37 °C (scale bar: 1 cm), showing the degradation behaviour of the PGSU-1:0.5 scaffolds samples over time.

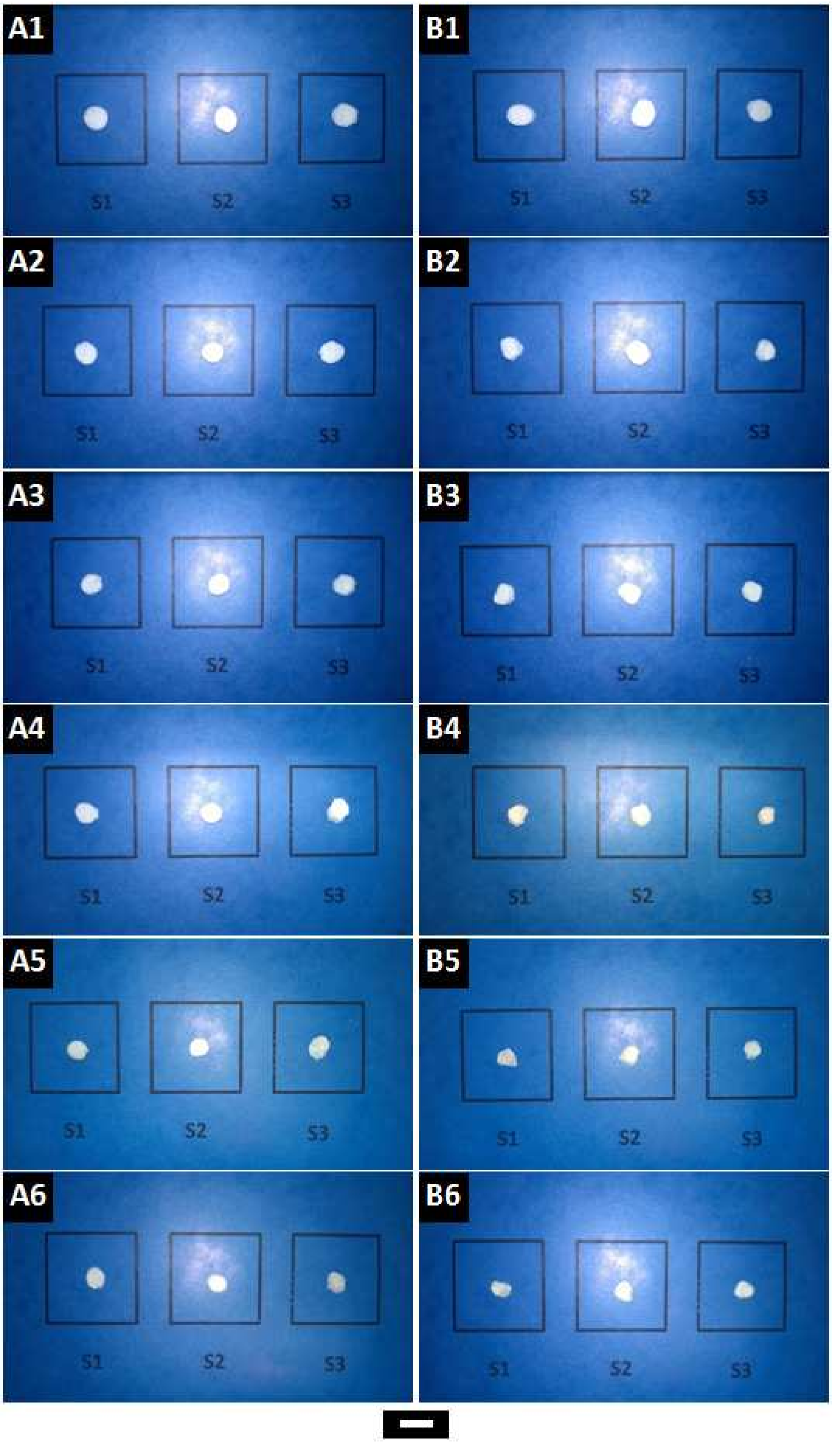

Figure S5. Pictures of PGSU-1:0.6 scaffold samples during incubation in PBS solution ((A1): Day 0; (A2): Day 7; (A3): Day 28; (A4): Day 56; (A5): Day 84; (A6): Day 112), and in PBS solution with the addition of lipase enzyme ((B1): Day 0; (B2): Day 7; (B3): Day 28; (B4): Day 56; (B5): Day 84; (B6): Day 112) under dynamic conditions for up to 112 days at 37 °C (scale bar: 1 cm), showing the degradation behaviour of the PGSU-1:0.6 scaffolds samples over time.

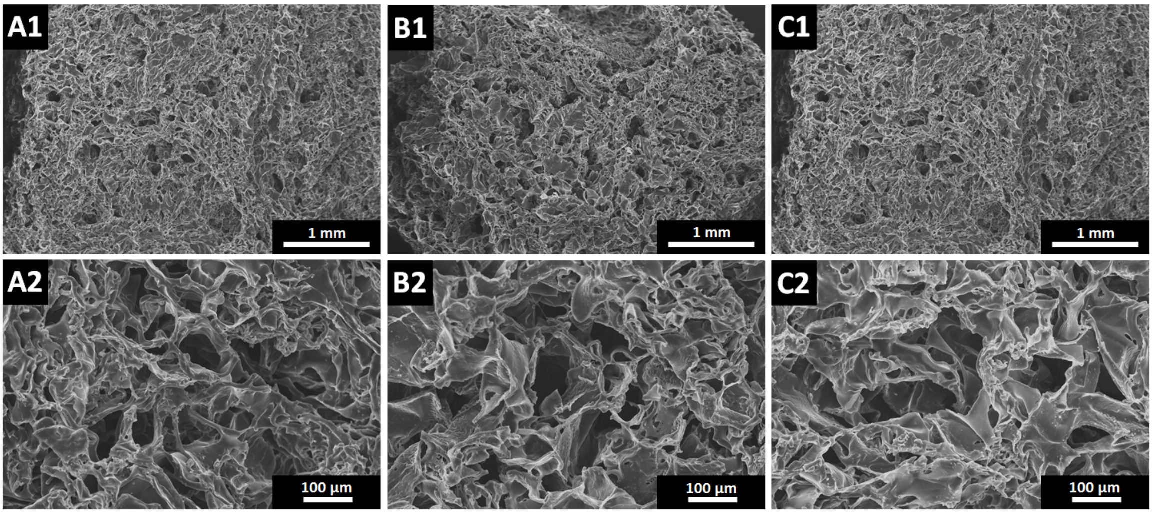

Figure S6. SEM micrographs of (A1-2) PGSU-1:0.4, (B1-2) PGSU-1:0.5 and (C1-2) PGSU-1:0.6 scaffolds after 34 days *in vitro* degradation tests in enzyme-free PBS solution at 37 °C.

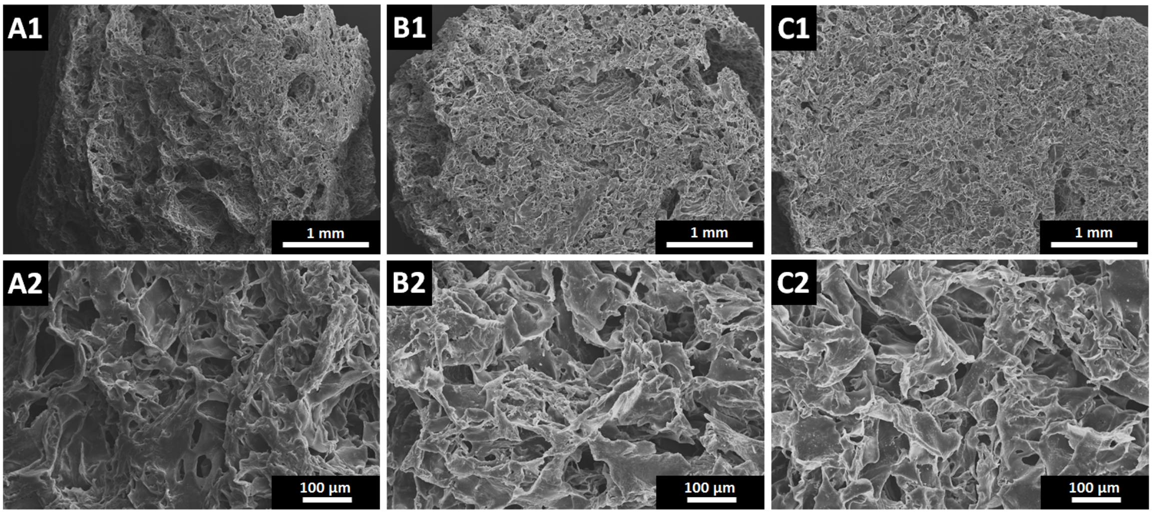

Figure S7. SEM micrographs of (A1-2) PGSU-1:0.4, (B1-2) PGSU-1:0.5 and (C1-2) PGSU-1:0.6 scaffolds after 34 days *in vitro* degradation tests in enzyme-containing PBS solution at 37 °C.

Table S1. Physical properties of selected polyester-based biopolymer scaffolds reported in the literature.

Polymer	Fabrication Method	Porosity, P_f / %	Relative density, ρ_r / (1-P_f)	Compressive modulus, E_c / MPa	Reference
PGS/PLLA	FD[a]	92	0.08	0.014	[1]
PGS/PLLA	FD[a]	91	0.09	0.006	[1]
PLLA	FD[a]	93.0	0.070	4.7	[1]
PLLA	TIPS[b]	82.4	0.176	4.4	[2]
PLLA	TIPS[b]	81.3	0.187	7.5	[2]
PLLA	TIPS[b]	92.7	0.073	6.0	[3]
PLLA	SC/PL[c]	93.5	0.065	3.6	[4]
PLLA	SC/PL[c]	95.5	0.045	3.1	[4]
PLLA	SC/PL[c]	96.4	0.036	2.3	[4]
PLLA	SC/PL[c]	98.5	0.015	2.1	[4]
PLLA	TIPS[b]	87.0	0.130	1.8	[5]
PLLA	TIPS[b]	93.0	0.070	4.3	[6]
PLLA	SC/PL[c]	94.5	0.055	0.30	[7]
PLLA	SC/PL[c]	96.8	0.032	0.02	[7]
PLLA	SC/PL[c]	95.2	0.048	0.05	[7]
PLLA	SC/PL[c]	95.8	0.042	0.05	[7]
PLLA	SC/PL[c]	96.1	0.039	0.08	[7]
PDLLA	RM/PL	90.0	0.100	5.2	[8]
PDLLA	RM/PL	92.6	0.074	1.7	[8]
PDLLA	TIPS[b]	94.0	0.06	0.89	[9]
PDLLA	SC/PL[c]	93.0	0.070	2.4	[10]
PLGA	SC/PL	90.0	0.100	0.16	[11]
PLGA	GF/PL	90.0	0.100	0.29	[11]
PLGA	SC/PL[c]	97.0	0.030	0.25	[12]
PLGA	SC/PL[c]	93.0	0.070	2.0	[12]
PLGA	SC/PL[c]	92.0	0.080	3.0	[12]
PLGA	SC/PL[c]	91.5	0.085	3.5	[12]
PLGA	SC/PL[c]	87.0	0.130	7.5	[12]
PLGA	SC/PL[c]	80.0	0.200	12	[12]
PLGA	RM/PL	88.0	0.120	15	[13]
PLGA	RM/PL	88.0	0.120	7.5	[13]
PLGA	RM/PL	88.0	0.120	7.0	[13]
PLGA	RM/PL	88.0	0.120	5.5	[13]
PLGA	RM/PL	88.0	0.120	4.5	[13]
PCL	SC/PL[c]	74.0	0.260	0.40	[14]
PCL	SC/PL[c]	88.1	0.119	0.22	[15]
PCL	TIPS[b]	80.0	0.200	0.38	[16]
PCL	SC/PL[c]	76.0	0.240	4.3	[17]
PCL	SC/PL[c]	93.0	0.070	3.1	[18]
PCL	SC/PL[c]	65.0	0.350	1.2	[19]
PCL	TIPS[b]	89.0	0.110	0.08	[20]
PCL	TIPS[b]	88.0	0.120	0.19	[20]

[a]Freeze-drying; [b]Thermally induced phase separation; [c]Solvent casting/particulate leaching; RM/PL = Room temperature compression moulding/particulate leaching; GF/PL = Gas foamed/particulate leaching.

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