Supplementary Material 1: Description of the filament extruder

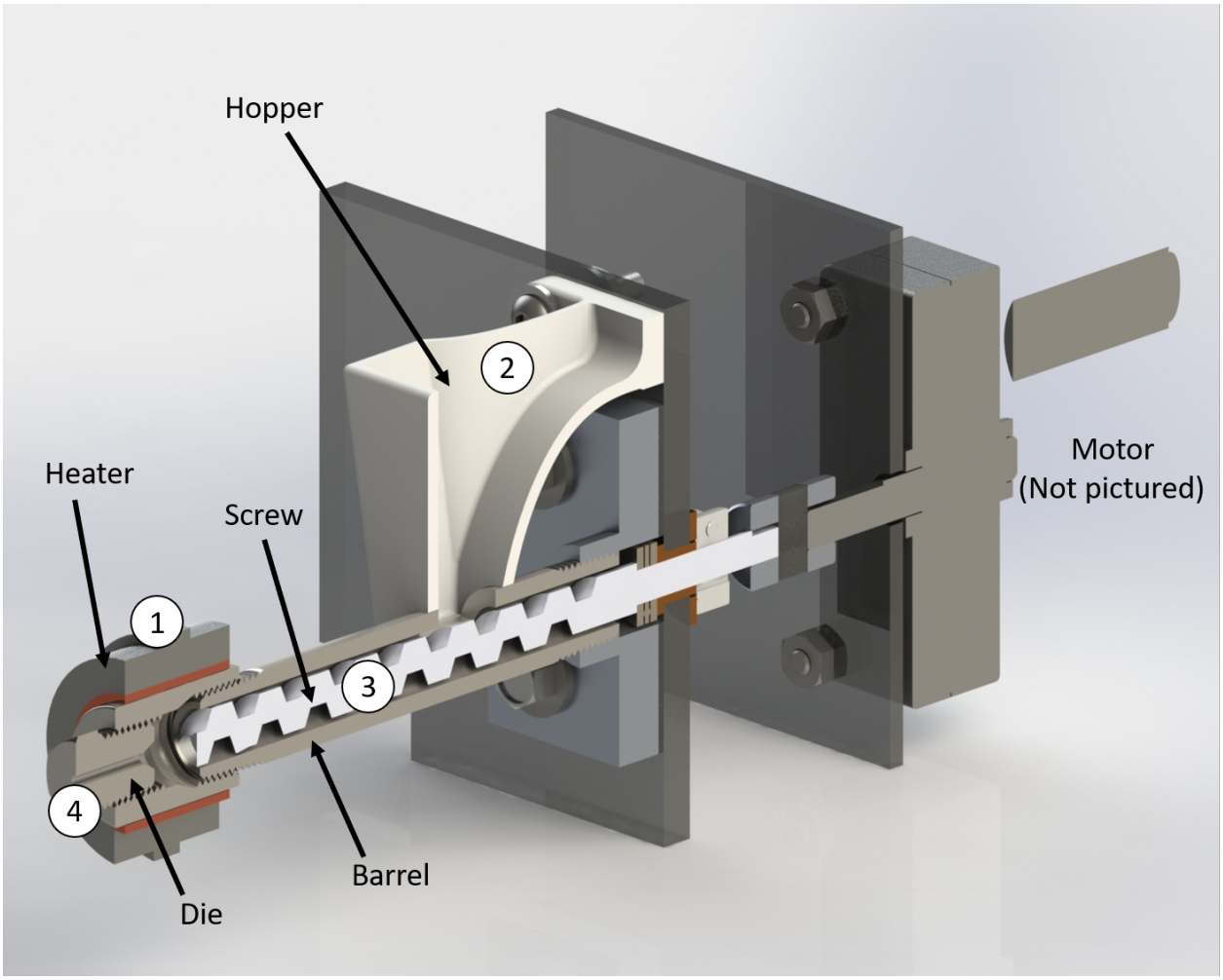

FIG. S1: Schematic of the filament extruder.

Process description:

1. A heater surrounding the die heats it to a pre-selected constant temperature.
2. Polymer/composite polymer pellets are fed into the barrel here through a hopper after the die is at its selected temperature.
3. The screw rotates, carrying pellets to the die, which conducts heat down the metal barrel, partially melting the pellets prior to final melting in the die.

4. The extrusion chamber fills with melted polymer pellets, until it is forcibly extruded out through the die nozzle.

Experiment Specifications

Screw Speed: 16 RPM

Die Temperature: 90°C

Die Diameter: 2.54 mm

Heating Zones: 1 (Surrounding the die)

Motor Voltage: 24V

Screw diameter: 9.00mm

Barrel Inner Diameter: 11.29 mm

Barrel Outer Diameter: 17.20 mm

Supplementary Material 2: Proliferation of C3H10 T1/2 in porous PCL/β-TCP scaffolds

Methods

The porous scaffolds consisted of cylinders measuring 10mm in diameter and 5mm in height, with a 20% β-TCP composition, a strut distance of 1.25mm and a layer thickness of 200µm. Using µ-CT images, the surface area of the scaffolds was assessed, and the appropriate number of cells were seeded to ensure a concentration of 0.8×10^4 cells/cm^2. Proliferation was assessed using the same protocol as the non-porous flat scaffolds described in the manuscript.

Results and discussion

The number of cells at the surface of the porous scaffolds after 1, 7 and 11 days is introduced in Fig. S3 a), showing a significant increase. The proliferation rate, calculated as the ratio of the number of cells at a given time point over the number of cells at day 1, is presented in Fig. S3 b). As a matter of comparison, the proliferation rate on the flat scaffolds with a similar composition is also represented. A similar increase can be noted between the 2D and 3D scaffolds, without significant differences. Such results tend to confirm that the size of the pores (<100µm) is large enough for the cells to sense the porous scaffolds as a 2D surface, thus validating the use of 2D non-porous scaffolds as a model for biological studies.

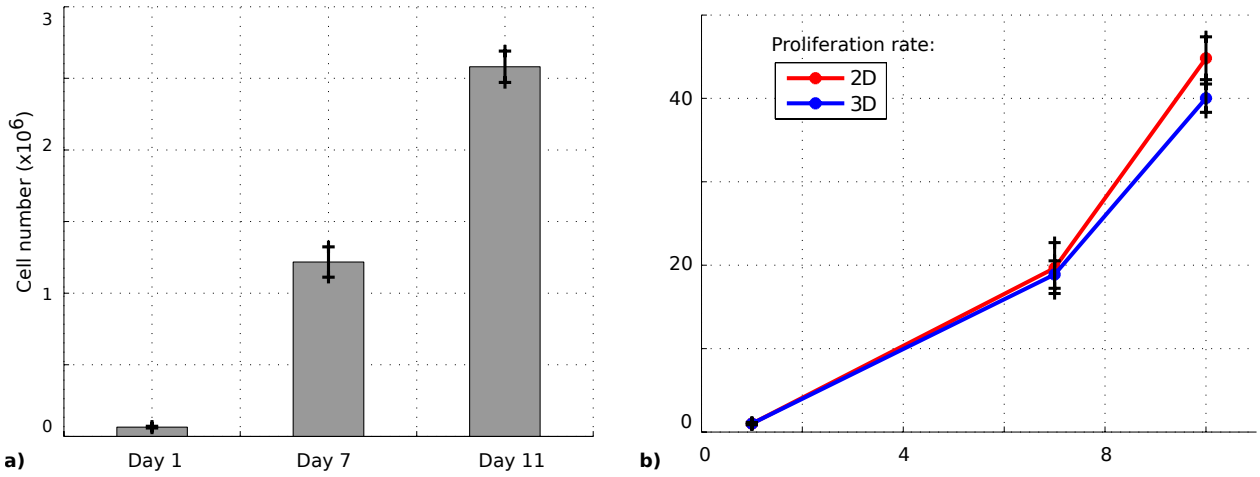

FIG. S2: a) Evolution of the number of cells of C3H10T1/2 cells in porous 3D printed PCL/β-TCP (80:20) over time. b) Proliferation rates of C3H10T1/2 on a 2D flat surface and a 3D porous scaffold surface of identical composition.

Supplementary Material 3: Cross-sectional SEM imaging

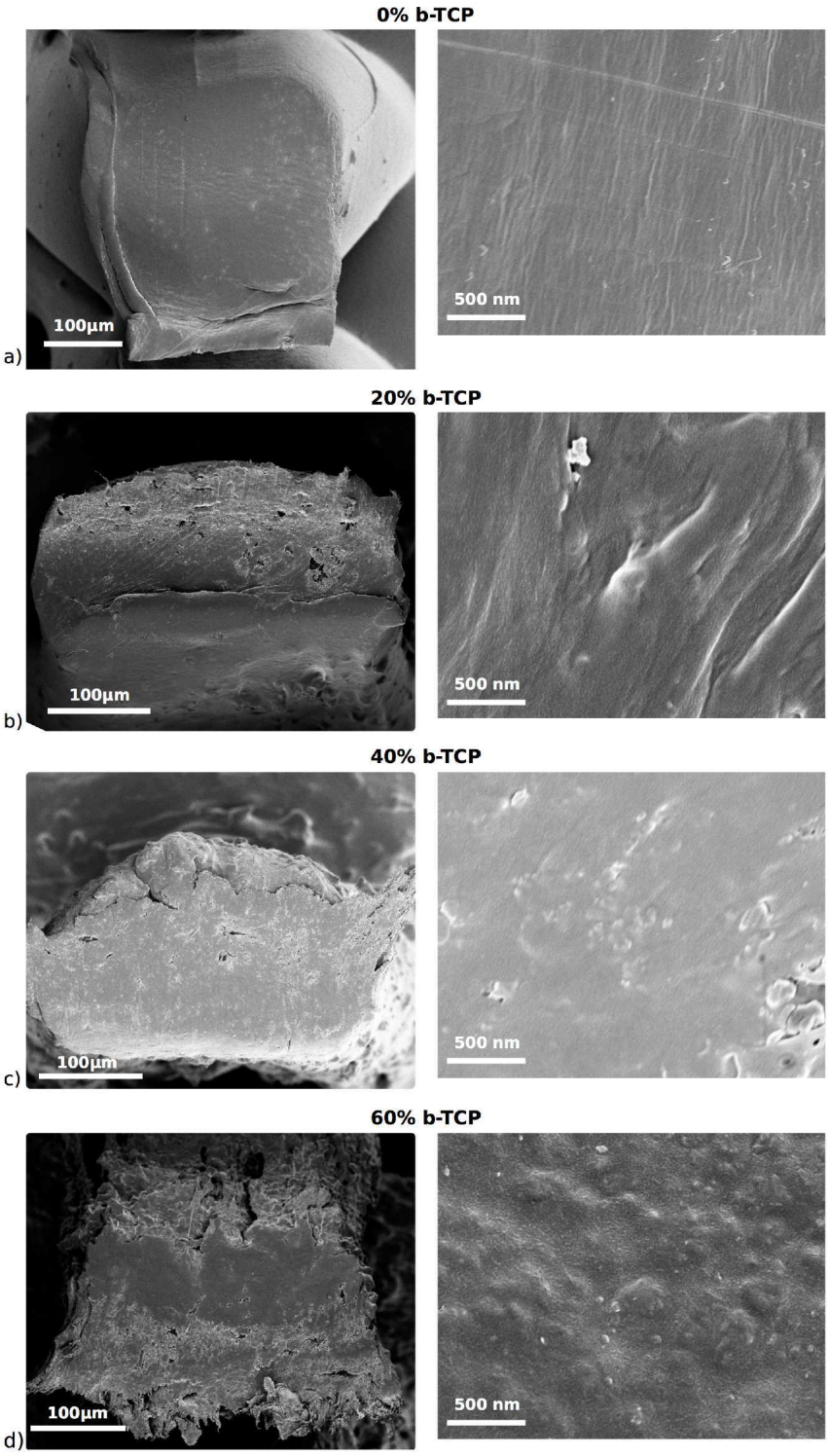

FIG. S3: Cross-sectional SEM imaging of struts of 3D printed PCL/β-TCP porous scaffolds with increasing ratios of ceramic: a) 0%, b) 20%, c) 40%, d) 60%.