

Supporting Information to

New, 3D binder-jetted carbons with minimal periodic surface structures

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Table S1. Geometrical aspects of the TPMS structures investigated in this study

Cell type	Geometric porosity (%)	Surface area (mm ²)	Specific surface area (mm ² ·m ⁻³)
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CLP	61.9	13 813	1004
GY	67.0	13 745	989
P	75.6	10 335	737

Table S2. Bulk (ρ_b) and skeletal (ρ_s) densities before and after grinding, total, open and closed porosities, BET area (A_{BET}) and specific surface area (S_{NLDFT}).

Sample #	Bulk density (g·cm ⁻³)	Skeletal density of the monolith (g·cm ⁻³)	Skeletal density of the powder (g·cm ⁻³)	Total porosity (%)	Closed porosity (%)	A_{BET, N_2} (m ² ·g ⁻¹)	S_{NLDFT, N_2+CO_2} (m ² ·g ⁻¹)	V_{tot} (cm ³ ·g ⁻¹)
CLP	1.62	1.76	2.03	20.2	12.4	≈ 0	≈ 0	≈ 0
GY	1.62	1.75	2.01	19.4	11.9	≈ 0	≈ 0	≈ 0
P	1.62	1.79	2.06	21.5	12.2	≈ 0	≈ 0	≈ 0

Table S3. Mechanical properties of the TPMS architectures.

Sample #	Length × diameter (cm × cm)	Apparent density (g·cm ⁻³)	Compressive strength (MPa)	Strain at break (%)	Young's modulus (MPa)
CLP	3.32 × 1.93	0.69	24.1 ± 2.6	2.65 ± 0.27	1235 ± 3
GY	3.36 × 1.93	0.61	7.73 ± 0.05	2.21 ± 0.06	576 ± 8
P	3.38 × 1.93	0.41	2.01 ± 0.11	0.93 ± 0.17	312 ± 6

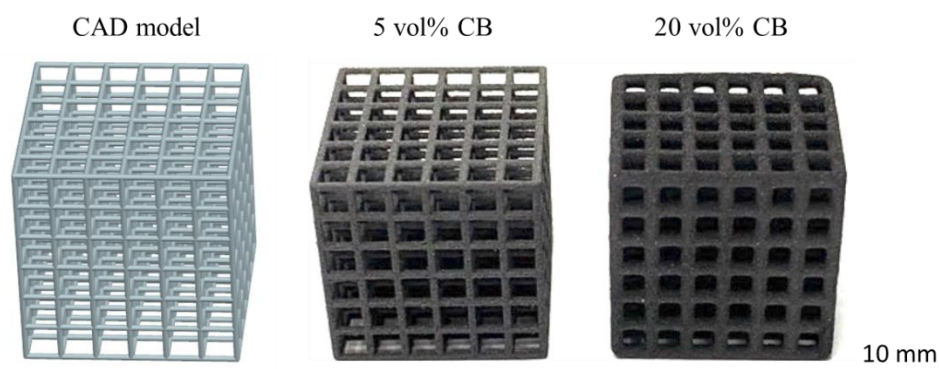


Figure S1: Results of an experimental campaign carried out to manufacture samples with powders blended with 5 vol.% and 20 vol.% CB, showing the comparison between CAD model and structures printed with the same printing parameters and powders but with different CB volume fractions.