Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.
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Supporting Information

Silk fibroin as a biotemplate for hierarchical porous silica monoliths for random laser applications

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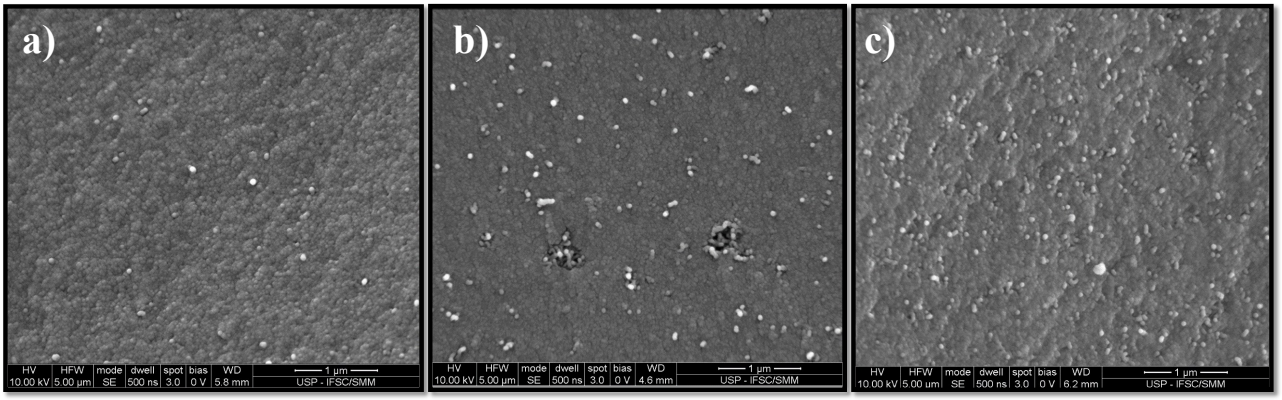

Figure S1. SEM image of surface composites: a) SF1; b) SF2; c) SF4

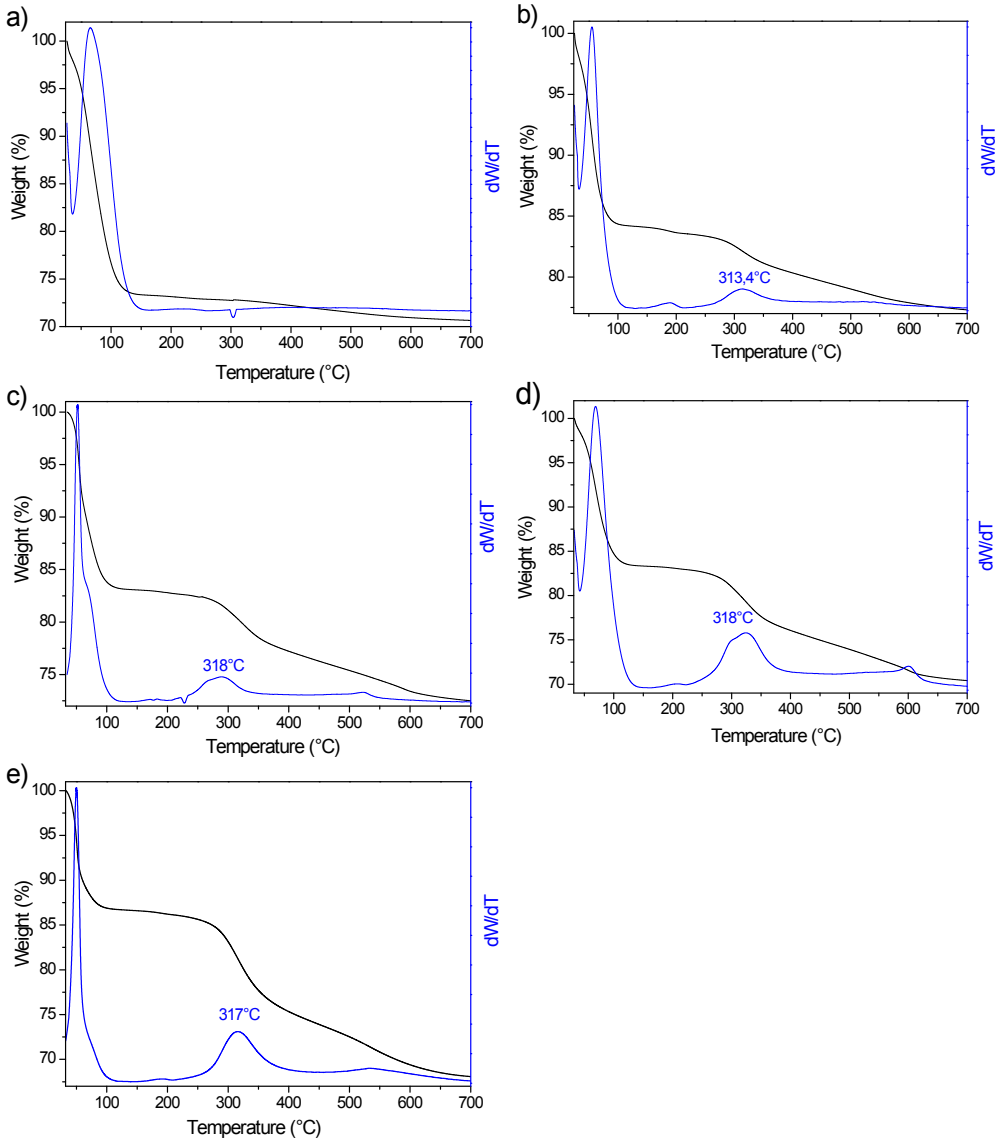

Figure S2. Thermogravimetric curves of silica/fibroin hybrid monoliths: a) SF0; b) SF1; c) SF2; d) SF3 and e) SF4.

Table S1: Samples composition and degradation temperature of fibroin (T_{onset}) determined by thermogravimetric curves.

Samples	Fibroin (%)	T_{onset} (°C)
SF0	0	-
SF1	3.9	313
SF2	7.9	318
SF3	10.2	318
SF4	15.8	317

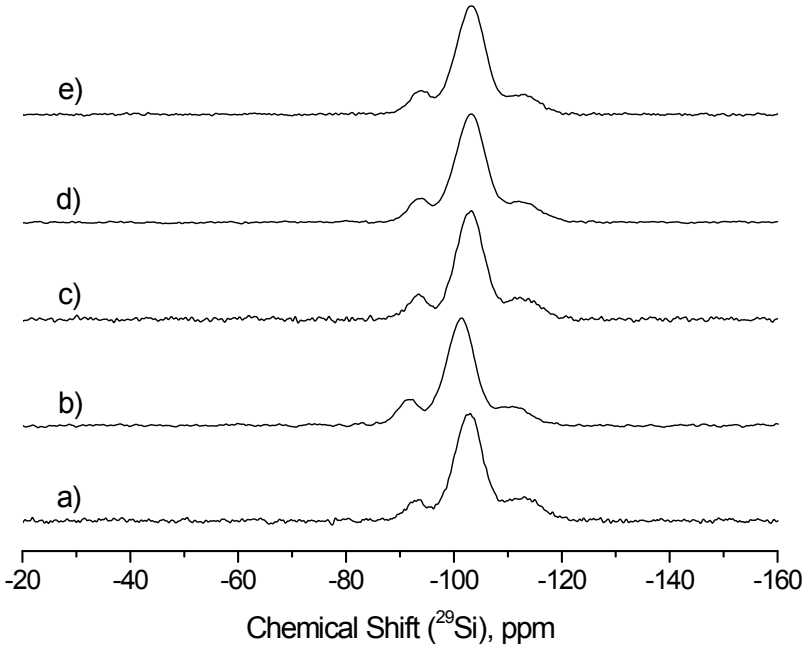

Figure S3. $^{29}Si\{^{1}H\}$ CP MAS spectra of silica/fibroin hybrid monoliths with different fibroin relative contents: a) SF0; b) SF1; c) SF2, d) SF3 and e) SF4.

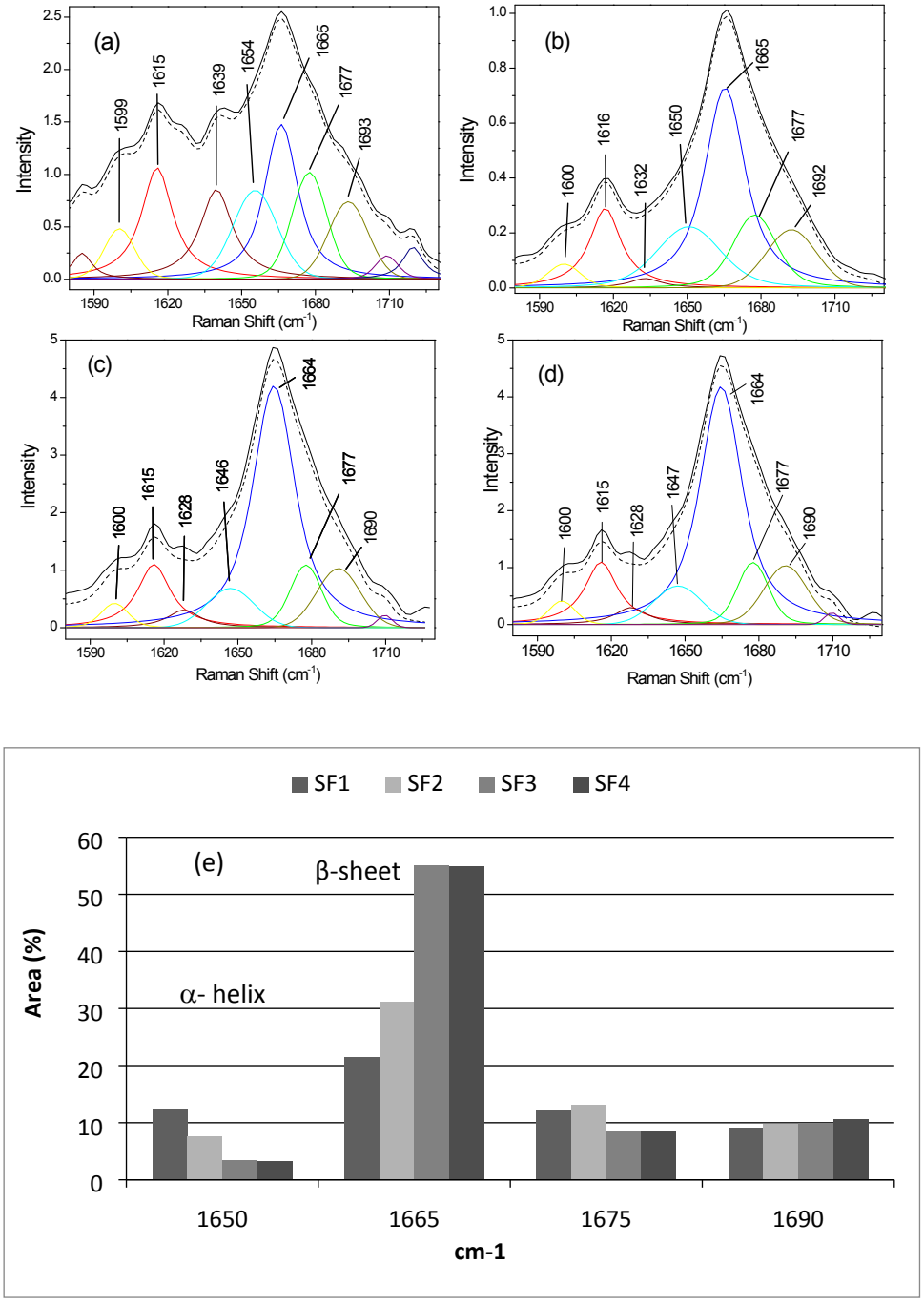

Figure S4: Deconvolution of the Raman spectra of the samples (a) SF1, (b) SF2, (c) SF3, (d) SF4 and (e) changes in β-sheet fraction of the samples assessed by Raman amide I bands (1600-1700 cm^{-1}) analysis.

Table S2. Heating program used to calcinate the fibroin fraction in the silica/fibroin hybrids monoliths. Heat temperature, heating rate and the time that the samples were kept in each temperature are presented.

Temperature (°C)	Rate (°C.min^{-1})	Time (h)
40	1	4
60	1	12
80	1	12
100	1	4
120	1	4
150	1	1
200	2	2
250	2	2
300	2	2
400	2	2
500	2	2
600	2	2
700	2	4