

Supplementary Information

Controlled surface mineralization of metal oxides on nanofibers

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Figure S1. SEM micrographs of the nanoparticles (a) PS, (b) P(S_{0.99-co-VPA}_{0.01}), (c) P(S_{0.96-co-VPA}_{0.04}), (d) P(S_{0.90-co-VPA}_{0.10}).

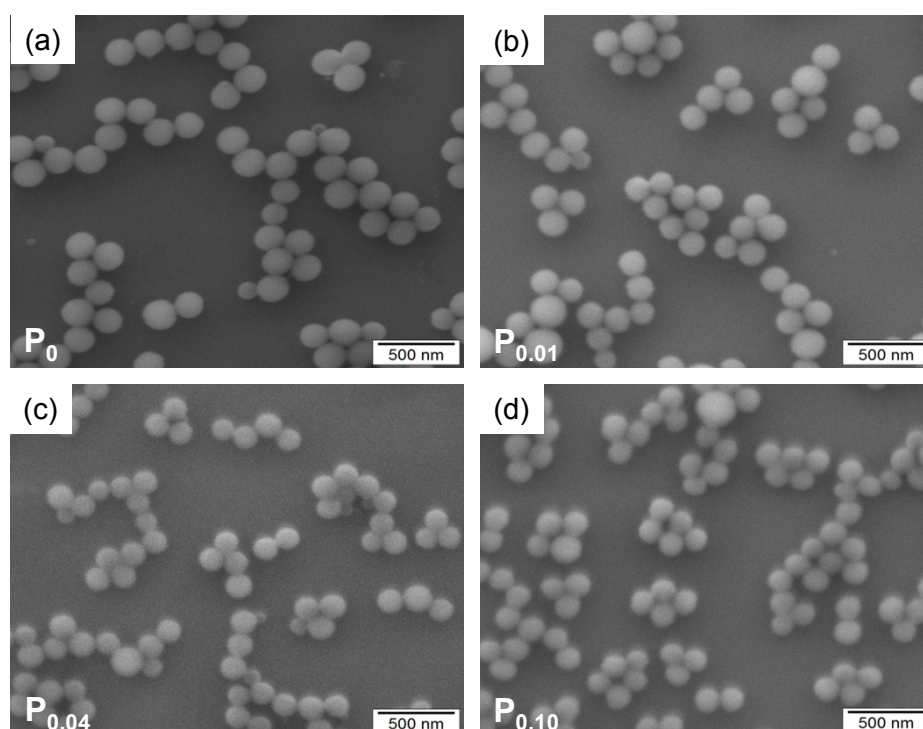


Figure S2. ^{31}P -NMR (202 MHz, DMF-d_6 , 298K) spectra of (a) $\text{P}(\text{S}_{0.99}\text{-co-VPA}_{0.01})$, (b) $\text{P}(\text{S}_{0.96}\text{-co-VPA}_{0.04})$, (c) $\text{P}(\text{S}_{0.90}\text{-co-VPA}_{0.10})$.

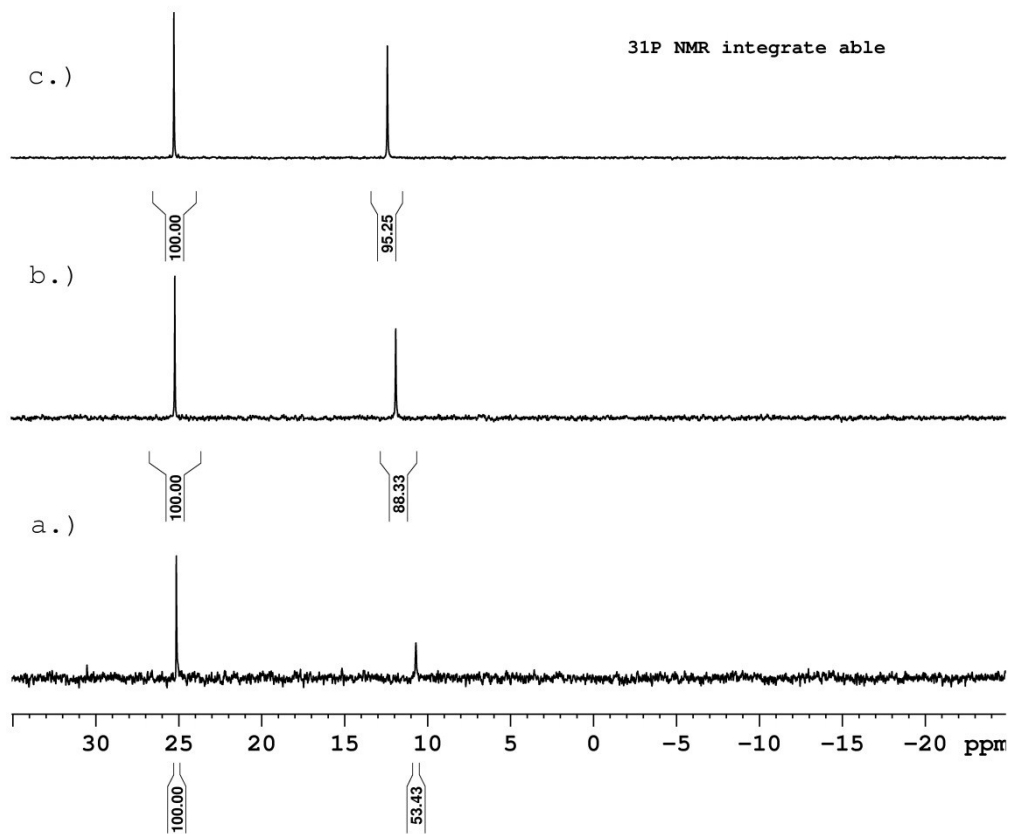


Figure S3. SEM micrographs of the electrospun fibers of (a) PS, (b) P(S_{0.99-co}-VPA_{0.01}), (c) P(S_{0.96-co}-VPA_{0.04}), (d) P(S_{0.90-co}-VPA_{0.10}).

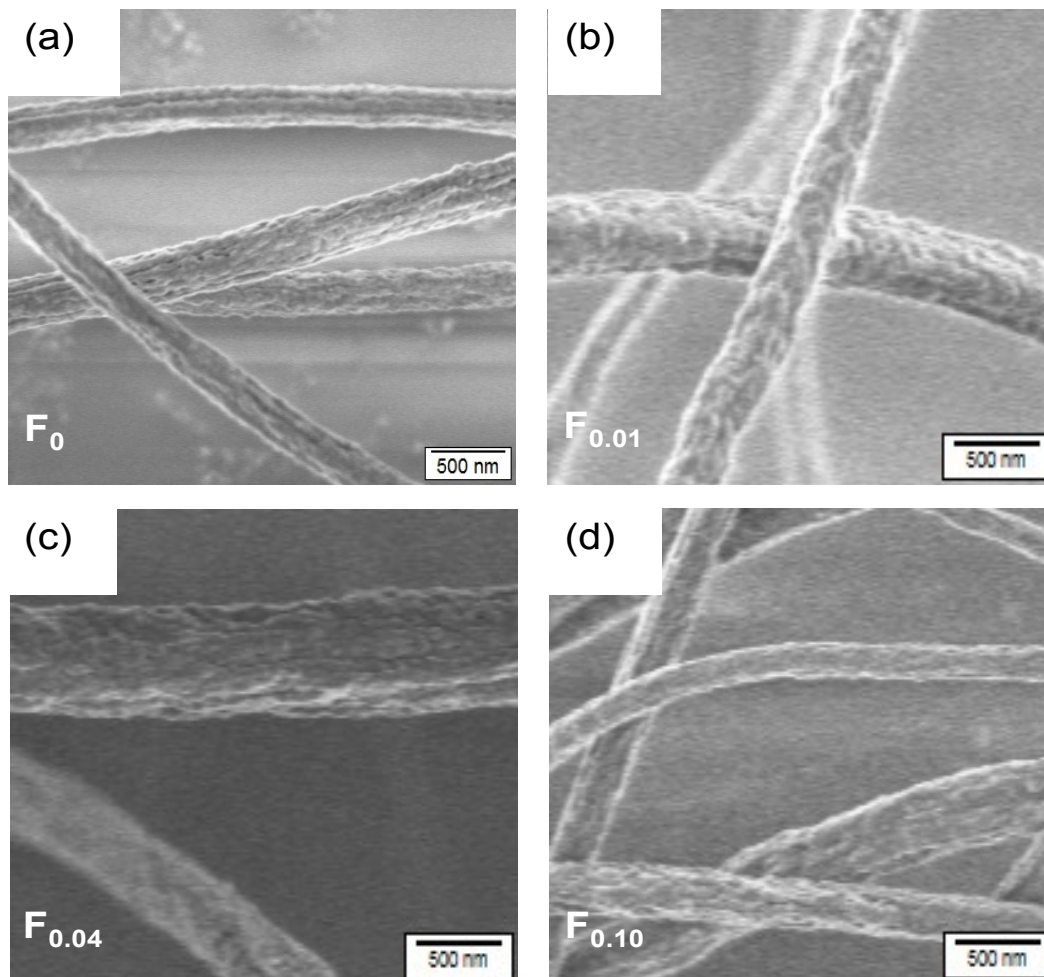


Figure S4. SEM micrographs of the electrospun fibers after ceria crystallization: (a) PS, (b) $P(S_{0.99-co-VPA_{0.01}})$, (c) $P(S_{0.96-co-VPA_{0.04}})$, (d) $P(S_{0.90-co-VPA_{0.10}})$.

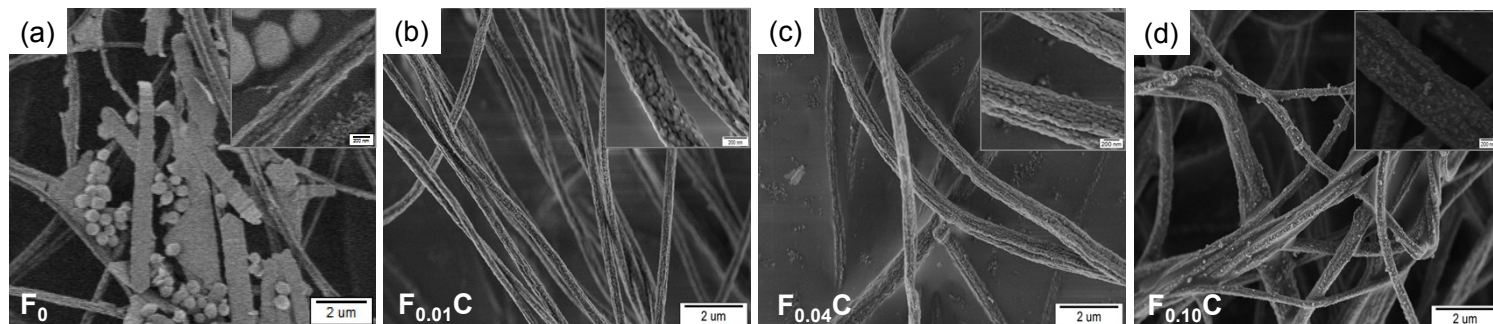


Figure S5. SEM micrograph showing the general view of the electrospun fibers after ceria crystallization of P(S_{0.99-co}-VPA_{0.01}).

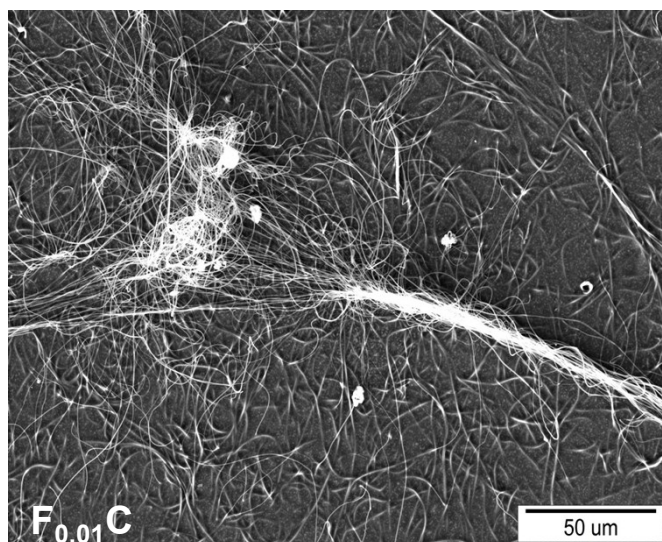


Figure S6. EDX spectrum and corresponding of the indicated area of a electrospun P(S_{0.96}-co-VPA_{0.04}) fibers after ceria crystallization.

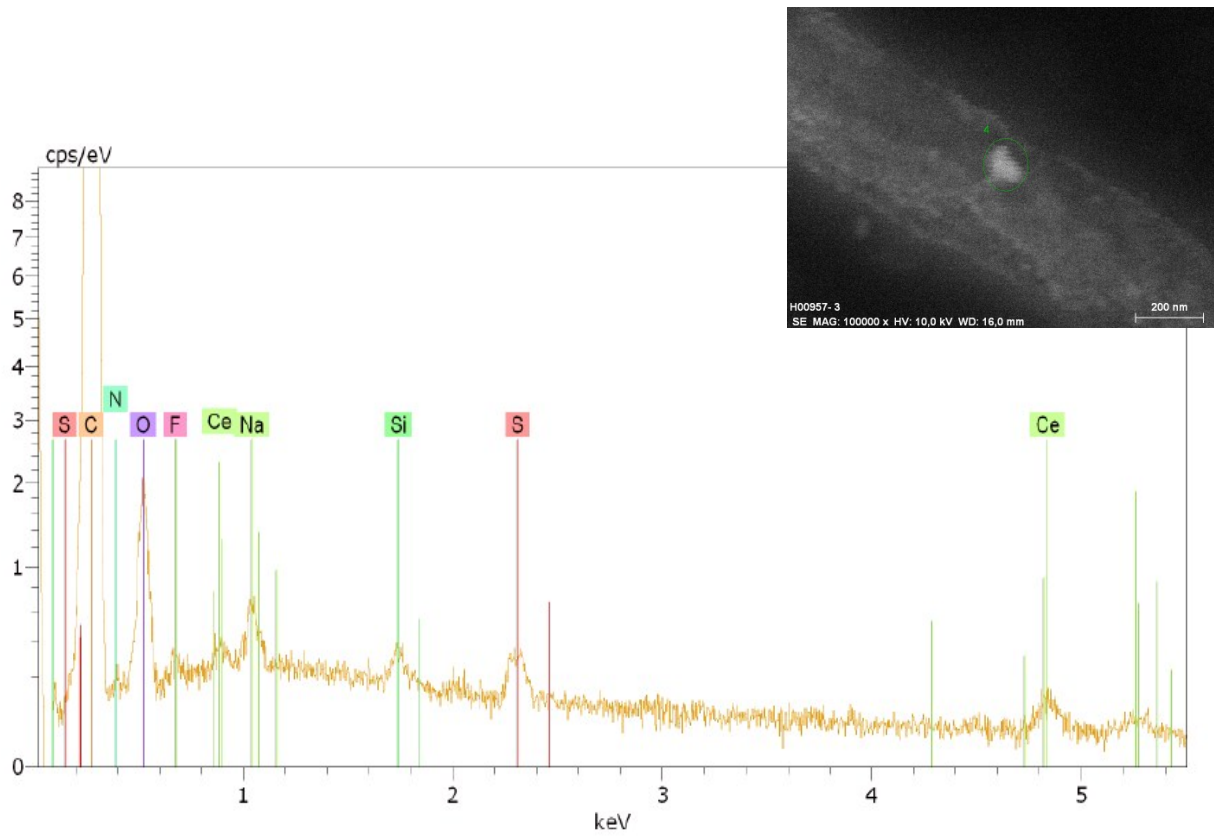


Figure S7. EDX spectrum and corresponding of the indicated area of a electrospun P(S_{0.96}-co-VPA_{0.04}) fibers after titania crystallization.

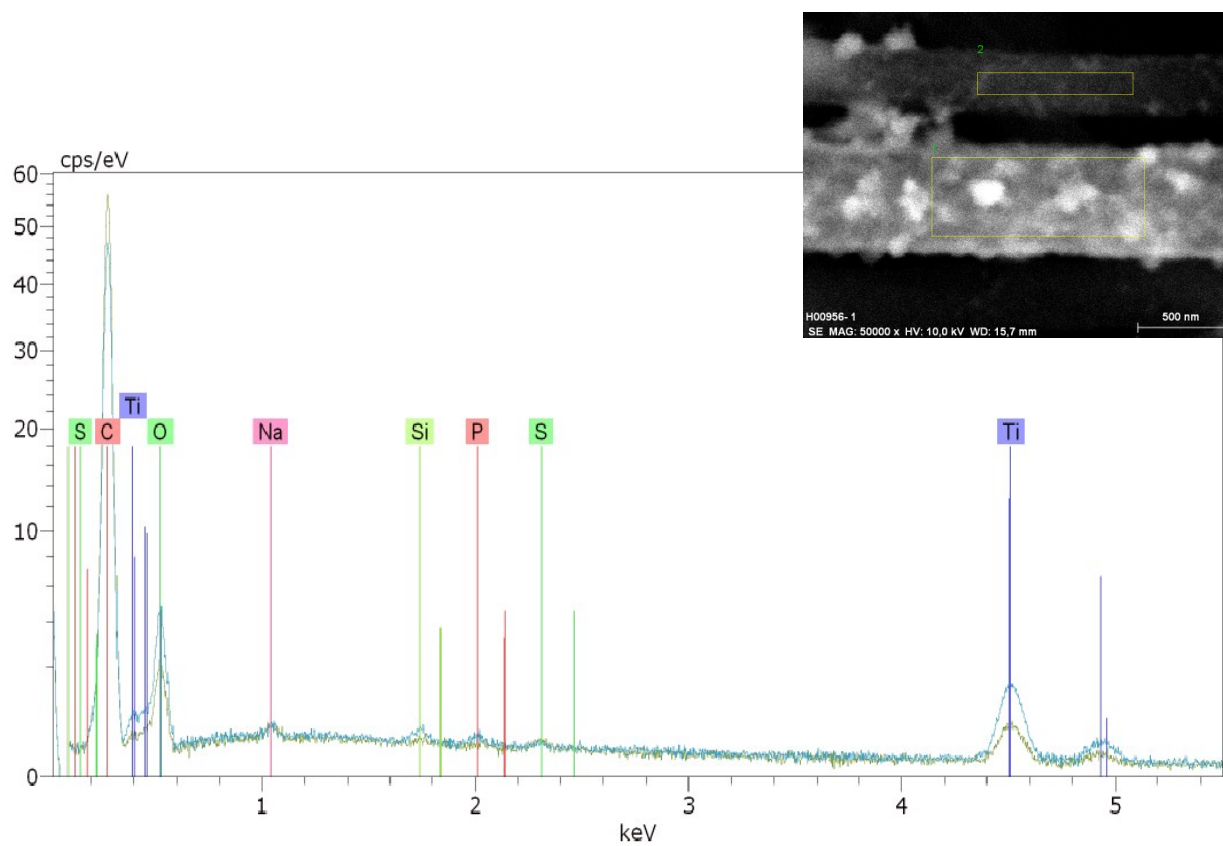


Table S1. Variation of average fiber diameter (AFD) of the electrospun fibers and molecular weight of the polymers as a function of comonomer concentration.

| Sample Name | M _w (g/mol) | Sample Name | AFD (nm) |
|-------------------------|------------------------|-------------------------|----------|
| P₀ | 315,000 | F₀ | 320 ±60 |
| P_{0.01} | 260,000 | F_{0.01} | 310 ±60 |
| P_{0.04} | 220,000 | F_{0.04} | 300 ±90 |
| P_{0.10} | | F_{0.10} | 270 ±50 |

Table S2. Atomic concentrations of the fibers before and after ceria crystallization measured by XPS.

| | C1s | O1s | P2p | Ce3d |
|--------------------------|------|------|-----|------|
| F₀ | 100 | 0 | 0 | NA |
| F₀C | 91.7 | 7.2 | | 1.1 |
| | | | | |
| F_{0.01} | 96.1 | 3.9 | 0 | 0 |
| F_{0.01}C | 92.2 | 5.8 | 0.8 | 1.2 |
| | | | | |
| F_{0.05} | 95.5 | 4.5 | 0 | 0 |
| F_{0.05}C | 84.0 | 11.1 | 3.4 | 1.5 |