Electronic Supplementary Material (ESI) for Journal of Materials Chemistry B.


# Supporting Information

**Title:** Robust Silk Fibroin/Bacterial Cellulose Nanoribbon Composite Scaffolds with Radial Lamellae and Intercalation Structure for Bone Regeneration

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## 1. MTT assay procedure

1) The composite scaffolds were put into 24-well plates and then were sterilized by 75% ethyl alcohol steam for 5 hours.

2) The PBS solution was used to soak and rinse the scaffolds three times, then scaffolds were pinned by the steel loops.

3) The culture medium were put into every well for 800 μL and the scaffolds were incubated for 30min in carbon dioxide incubator.

4) The cell suspension was prepared by dissociating the bone cells which grew well in cell culture dishes. Then 20 μL cell suspension was transferred in cell-count plate with pipette carefully.

5) The concentration of cell suspension was measured by an automated cell counter (Countstar, China). The volume of cell suspension seeded into scaffolds could be calculated by the amount of bone cells which should be seeded. MTT experiment was performed with a cell density of $5x10^4$ cell/well. For cell morphology observation, cells were seed on scaffolds with a cell density of $2x10^4$ cell/well.

6) A certain volume of cell suspension and culture media were poured into every well by pipette and the 24-well plates were placed into carbon dioxide incubator to culture the cells for 1, 2, 3, 5, 7 days.

7) The culture media were carefully extracted and then scaffolds were washed with PBS for 2 times. The 360 μL culture media without serum and 40 μL MTT (5g/L) were added into the

wells. The 24-well plates covered with aluminum foils were placed into carbon dioxide incubator for 4h.

8) The culture media was removed carefully and 400 μL dimethylsulfoxide was added into the wells. Then the 24-well plates were put into shaker for 30 min to fully dissolve the cells and generate the formazan.

9) The 100 μL culture media was transferred into 96-well plates and OD value of media was obtained by ELISA (Thermo MULTISKAN MK3, US). Each group contains three samples and the final OD value was the mean value of three data.

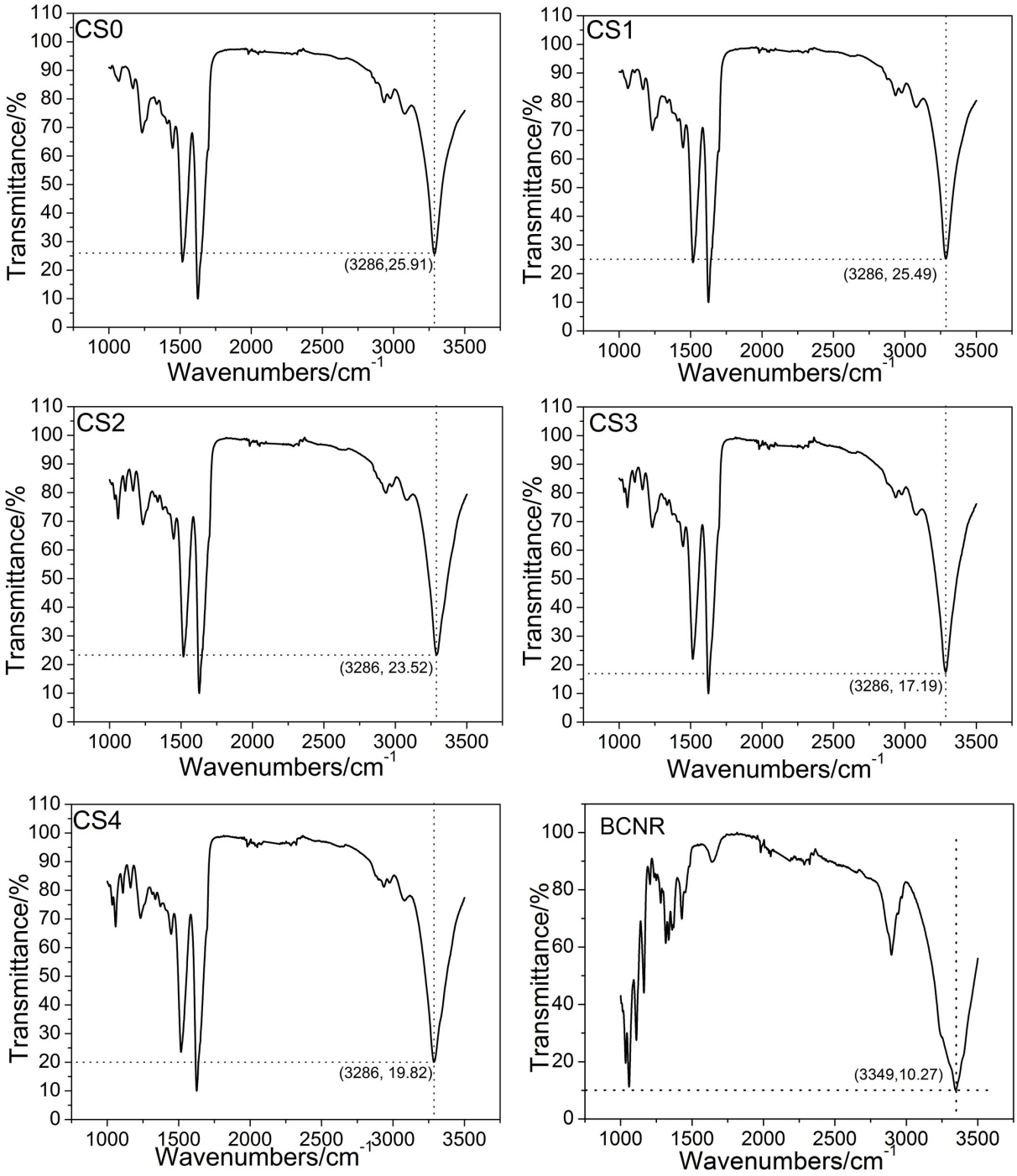


**Figure S1.** FTIR spectra of BCNR and SF/BCNR composite scaffolds with different BCNR contents

**Table S1.** Crystallite size of SF/BCNR scaffolds

| Sample | Crystallite size (nm) | | | |
|---|---|---|---|---|
| | (200) $L_a$ | (020) $L_b$ | (002)$L_c$ | Crystal volume |
| CS0 | 3.52 | 3.12 | 3.13 | 34.4 |
| CS1 | 3.21 | 5.62 | 3.41 | 61.5 |
| CS2 | 4.62 | 4.57 | 5.90 | 124.6 |
| CS3 | 5.12 | 5.92 | 4.64 | 140.6 |
| CS4 | 4.14 | 7.57 | 6.12 | 191.8 |

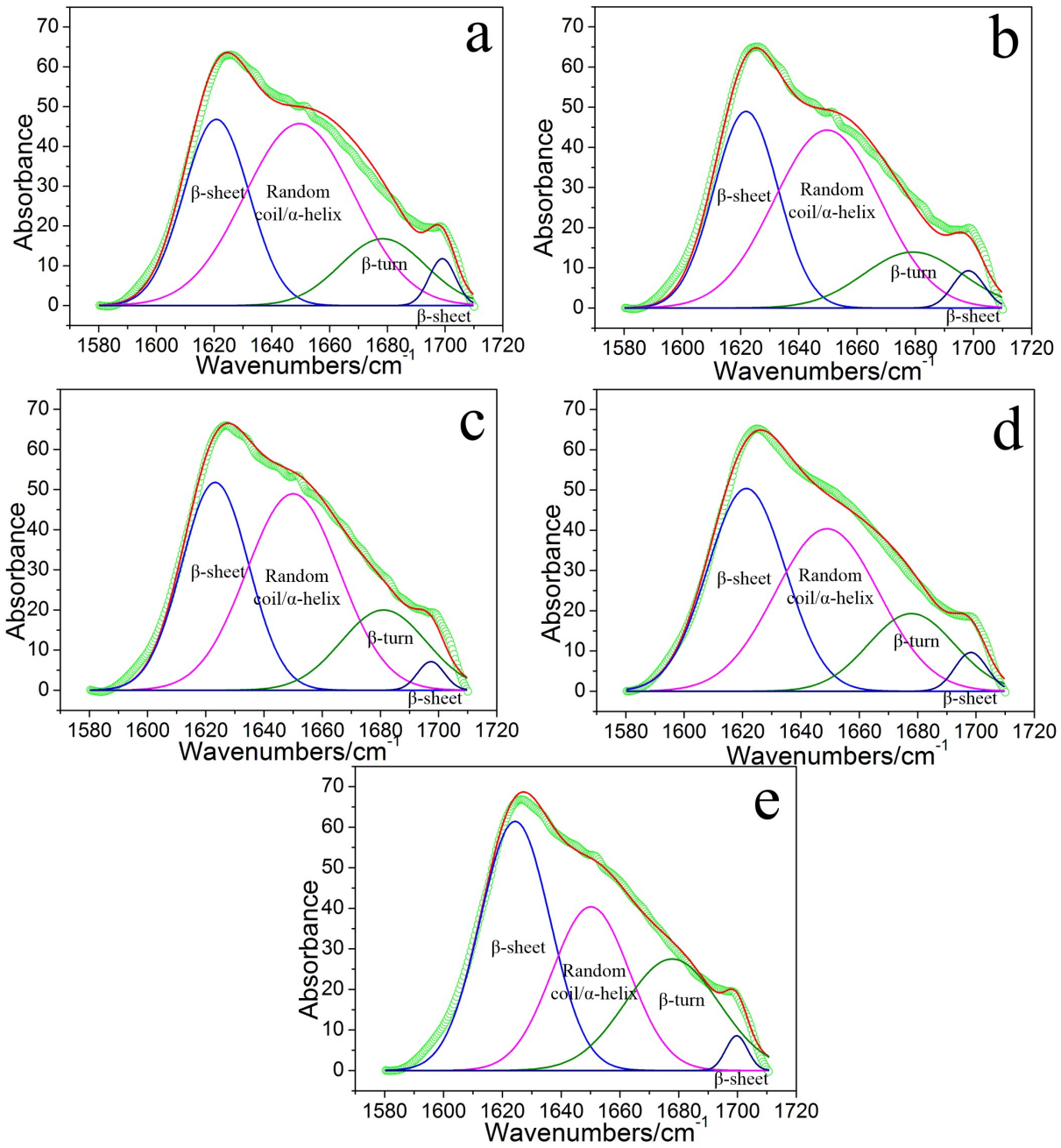


**Figure S2.** FTIR deconvolution of silk fibroin in amide I band of (a) CS0, (b) CS1, (c) CS2, (d) CS3, (e) CS4. The peak at 1650 $cm^{-1}$ corresponded to α-helix & random coils; the peaks at 1623 $cm^{-1}$ and 1697 $cm^{-1}$ were assigned as β-sheet; the peak at 1678 $cm^{-1}$ represented β-turn.