

Supplementary Materials

Different Molecular Interaction between Collagen and α - or β -Chitin in Mechanically Improved Electrospun Composite

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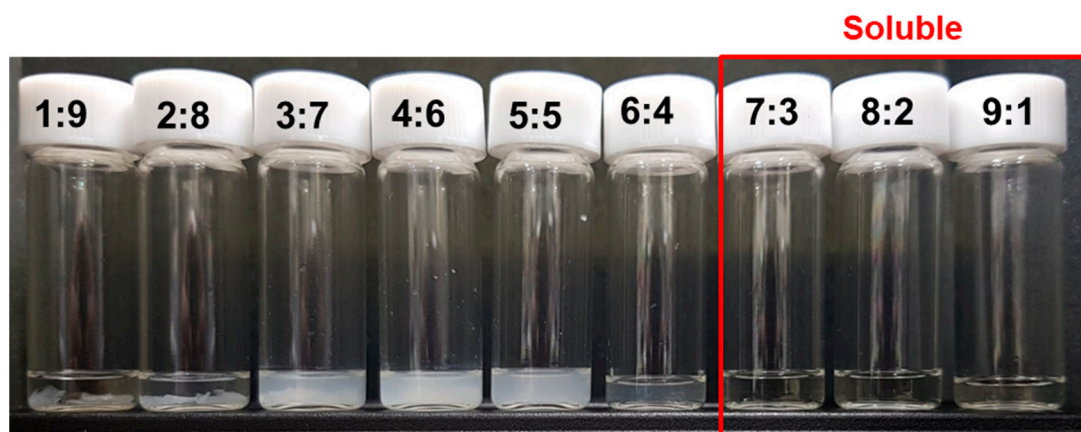


Figure S1. Representatively conducted solubility test of α -chitin in various ratio of HFIP:TFA solvent (all the solution concentrations were 1% (w/v)). Pure HFIP and TFA were excluded owing to its extremely poor solubility on chitin.

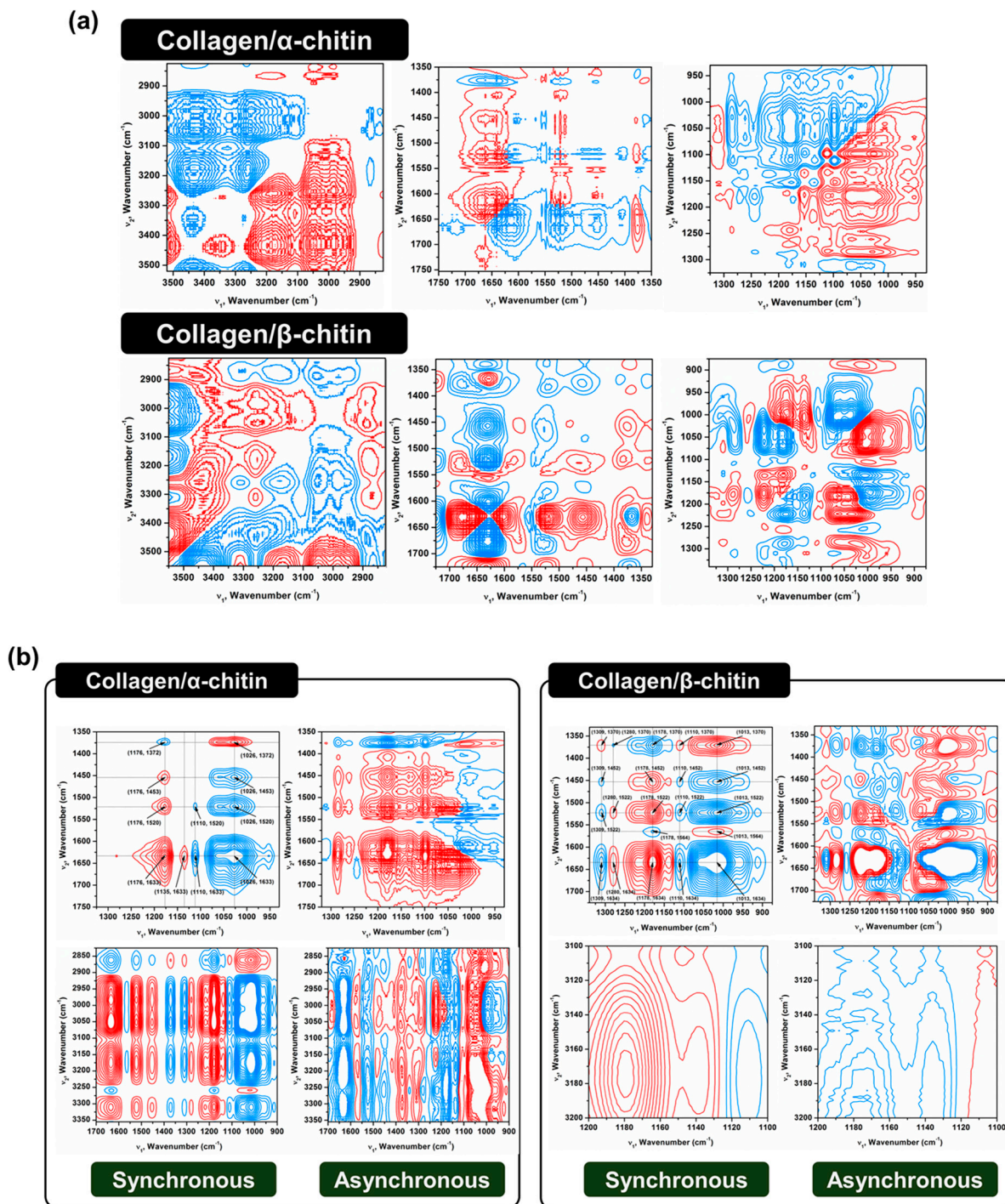


Figure S2. (a) Asynchronous 2DCOS and (b) heterogeneous contour map.

Table S1. 2DCOS analysis between collagen and α -chitin and corresponding sequences and intensity changes.

Sequential order	Wavenumber (cm ⁻¹)	Intensity change	Assignment	Origin	Reference
1	3436	▼	Intramolecular hydrogen bonding (O–H)	Chitin	[6,9]
2	2866	▼	-CH ₃	Collagen	[2,3]
3	2982	▲	-CH ₂	Chitin	[9]
4	3045	▲	N–H	Chitin	[9]
5	3160	▲	N–H	Chitin	[9]
6	1135	▲	C–O–C	Collagen, chitin	[2,3,9]
7	1176	▲	C–O	Collagen	[5]
8	1633	▲	C=O	Collagen, chitin	[1-3,8,10]
9	1520	▲	Amide N–H	Collagen, chitin	[2,5,9]
10	1372	▼	C–H, CH ₃	Collagen	[1]
11	1453	▲	CH ₂	Chitin	[1,4,5]
12	1026	▼	C–O	Collagen, chitin	[7,9]
13	1110	▼	C=O, C–O	Chitin	[8,9]

Table S2. 2DCOS analysis between collagen and β -chitin and corresponding sequences and intensity changes.

Sequential order	Wavenumber (cm ⁻¹)	Intensity change	Assignment	Origin	Reference
1	1280	▲	C–N, N–H	Collagen, chitin	[1-5,8,9]
2	3310	▲	N–H	Collagen	[2,6]
3	3176	▲	N–H	Chitin	[11,9]
4	1452	▲	Amide N–H	Collagen, chitin	[2,5,8,9]
5	1013	▼	C=O	Chitin	[8]
6	3050	▲	N–H	Chitin	[9,11]
7	3442	▼	OH	Collagen, chitin	[2,6,9]
8	2980	▲	CH ₃	Chitin	[9]
9	1178	▲	C–O	Collagen	[5]
10	1110	▼	C=O, C–O	Chitin	[8,9]
11	1522	▲	N–H	Collagen, chitin	[2,5,9]
12	1309	▼	CH ₂	Collagen	[7]
13	1370	▼	C–H, CH ₃	Collagen	[2]
14	2860	▼	-CH ₃	Collagen	[3]
15	1564	▼	Amide N–H	Collagen, chitin	[5,9]
16	1634	▲	Amide C=O	Collagen, chitin	[2,5,8]

Table S3. The results of differential scanning calorimetry (DSC) analysis.

Specimen	Temperature (°C)			ΔH (J·g ⁻¹)	State	Reference
	Onset	Peak	End			
Collagen	37	104	179	369.59	Dehydration	
α -Chitin	39	88	184	230.45	Dehydration	
β -Chitin	39	91	180	265.97	Dehydration	
Col	37	91	143	184.54	Dehydration	
	205	235	250	20.5	Denaturation	[12,13]
Col/ α -Chi	37	82	139	215.02	Dehydration	
	215	235	257	27.34	Denaturation	
Col/ β -Chi	37	85	133	142.03	Dehydration	
	211	237	255	39.77	Denaturation	

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