

Supporting Information

Preparation and Piezoelectric Catalytic Performance of Flexible Inorganic $\text{Ba}_{1-x}\text{Ca}_x\text{TiO}_3$ via Electrospinning

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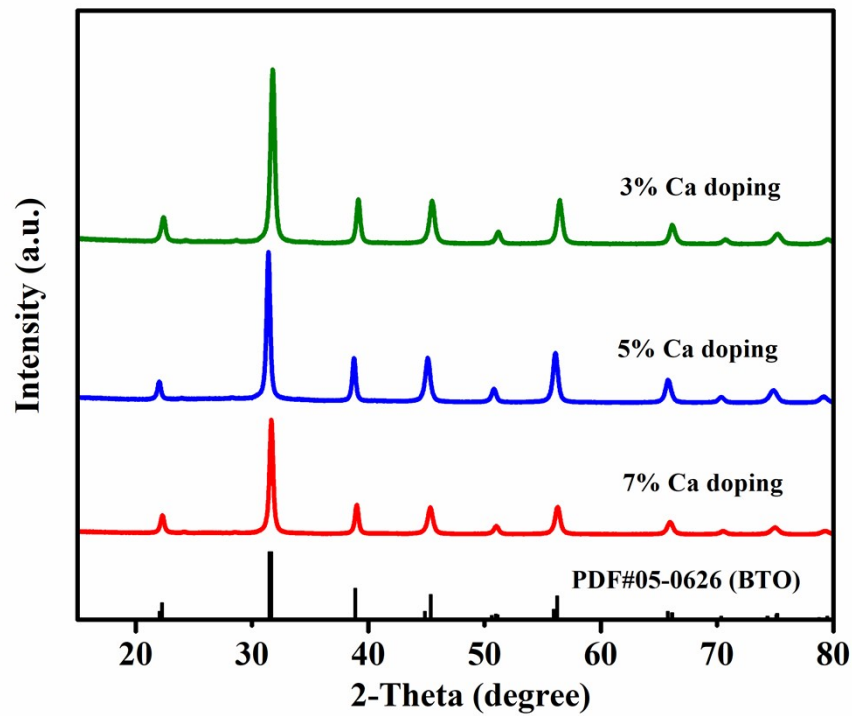


Fig. S1. The XRD data of BTO doped with different concentrations of calcium calcined at 850°C.

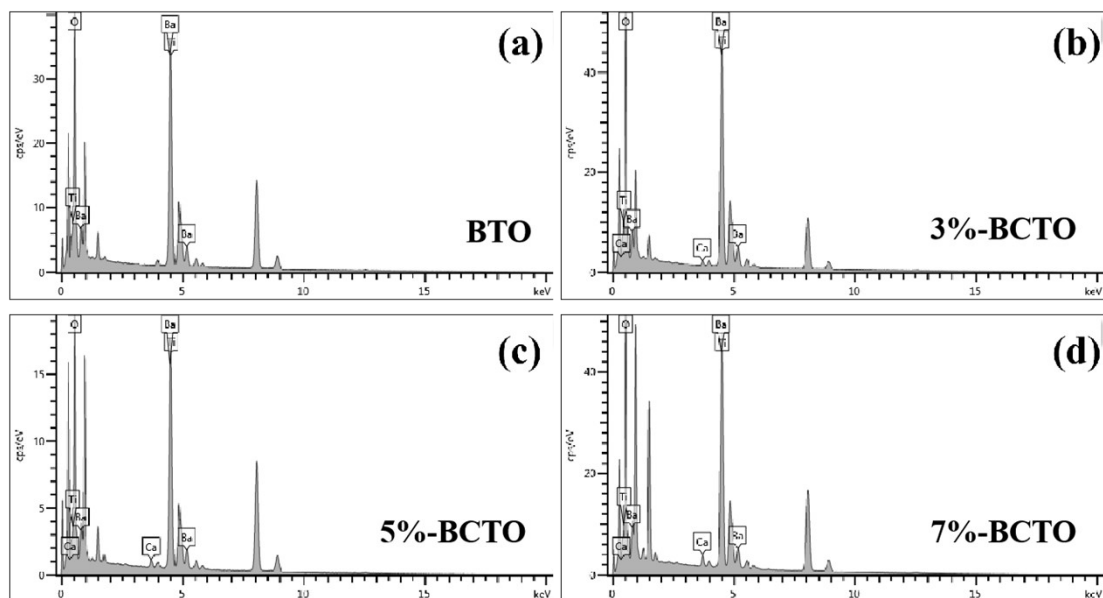


Fig. S2. The energy dispersive X-ray spectroscopy of sample calcined at 850°C (a) BTO. (b) 3%-BCTO (c) 5%-BCTO. (d) 7%-BCTO.

Table S1 The element content of BTO calcined at 850°C.

Element	Series	wt%	Atom percentage
O	K	38.59	78.23
Ti	K	16.48	11.16
Ba	L	44.43	10.61
Total:		100.00	100.00

Table S2 The element content of 3%-BCTO calcined at 850°C.

Element	Series	wt%	Atom percentage	Ca:Ba+Ca
O	K	36.30	76.29	0.03
Ca	K	0.42	0.35	
Ti	K	17.21	12.08	
Ba	L	46.08	11.28	
Total:		100.00	100.00	

Table S3 The element content of 5%-BCTO calcined at 850°C.

Element	Series	wt%	Atom percentage	Ca:Ba+Ca
O	K	36.49	75.97	0.05
Ca	K	0.70	0.58	
Ti	K	18.13	12.61	
Ba	L	44.69	10.84	
Total:		100.00	100.00	

Table S4 The element content of 7%-BCTO calcined at 850°C.

Element	Series	wt%	Atom percentage	Ca:Ba+Ca
O	K	36.66	76.13	0.07
Ca	K	0.96	0.80	
Ti	K	17.67	12.26	
Ba	L	44.70	10.81	
Total:		100.00	100.00	

Table S5 The Wyckoff Positions of each element of 5%-BCTO calcined at 850°C.

Atom	Wyckoff positions		
	x	y	z
Ba	0.0000	0.0000	-0.0067
Ca	0.0000	0.0000	-0.0067
Ti	0.5000	0.5000	-0.5795
O1	0.5000	0.5000	-0.2757
O2	0.0000	0.5000	0.5081

Table S6 The table of distances between various elements and Ca in 5%-BCTO calcined at 850°C.

Vector	Length (Å)	Oprr Cell
Ca-Ba	4.0164	1-1 0 0
Ca-Ba	4.0164	1 0-1 0
Ca-Ba	4.0230	1 0 0-1
Ca-Ba	4.0230	1 0 0 1
Ca-Ba	4.0164	1 0 1 0
Ca-Ba	4.0164	1 1 0 0
Ca-Ti	3.6574	1-1-1 0
Ca-Ti	3.3195	1-1-1 1
Ca-Ti	3.6574	1-1 0 0
Ca-Ti	3.3195	1-1 0 1
Ca-Ti	3.6574	1 0-1 0
Ca-Ti	3.3195	1 0-1 1
Ca-Ti	3.6574	1 0 0 0
Ca-Ti	3.3195	1 0 0 1
Ca-O1	3.0393	1-1-1 0
Ca-O1	3.0393	1-1 0 0
Ca-O1	3.0393	1 0-1 0
Ca-O1	3.0393	1 0 0 0
Ca-O2	2.8005	1 0-1-1
Ca-O2	2.8848	1 0-1 0
Ca-O2	2.8005	1 0 0-1
Ca-O2	2.8848	1 0 0 0
Ca-O2	2.8005	2 0 0-1
Ca-O2	2.8848	2 0 0 0
Ca-O2	2.8005	2 1 0-1
Ca-O2	2.8848	2 1 0 0
Ca-Ca	4.0164	1-1 0 0
Ca-Ca	4.0164	1 0-1 0
Ca-Ca	4.0230	1 0 0-1
Ca-Ca	4.0230	1 0 0 1

Ca-Ca	4.0164	1 0 1 0
Ca-Ca	4.0164	1 1 0 0

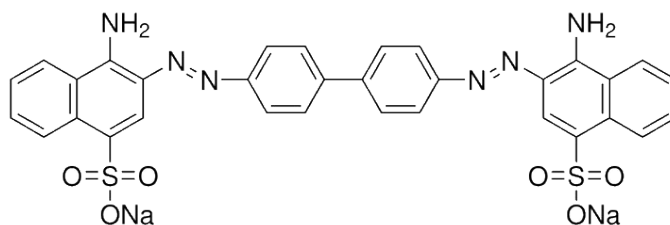


Fig. S3. The structural formula of Congo Red.

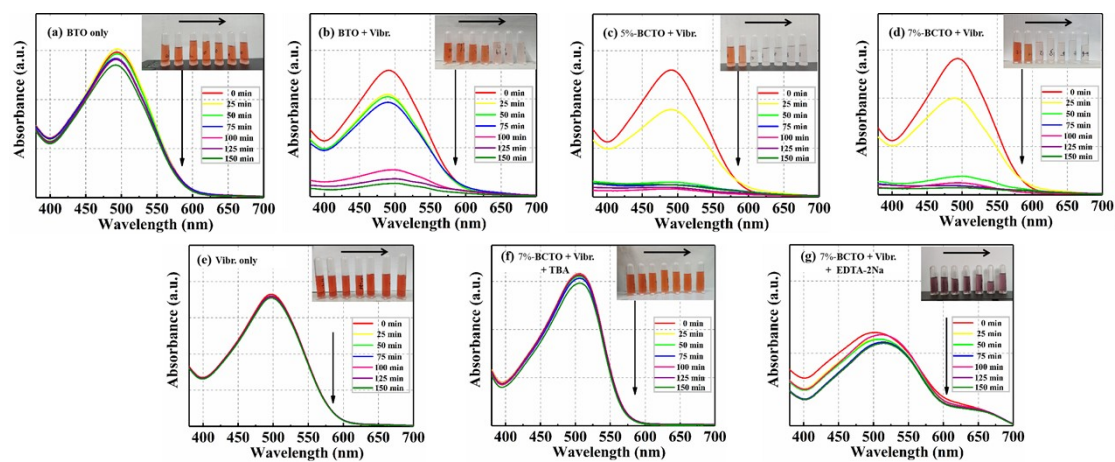


Fig. S4. (a)-(g) The UV-vis absorption spectra of the Congo Red aqueous solutions samples with different catalysts. Inset: photos of the Congo Red solutions samples.

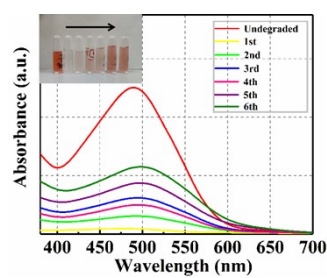


Fig. S5. The UV-vis absorption spectra of the Congo Red aqueous solutions samples with recycled 7%-BCTO. Inset: photos of the Congo Red solutions samples.

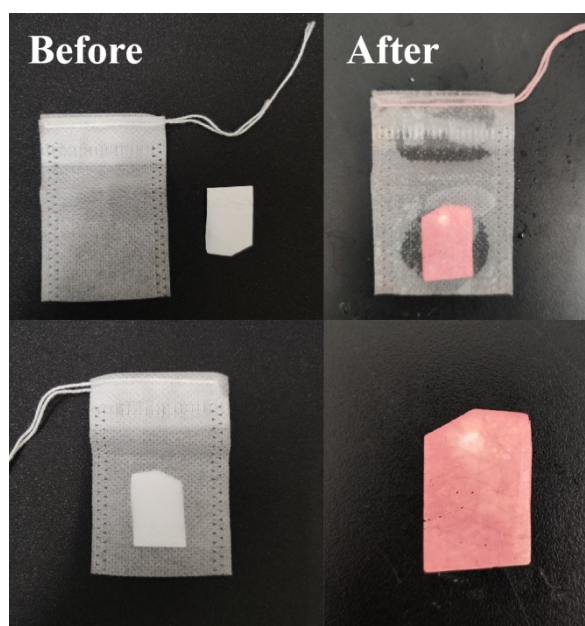


Fig. S6. Comparison of the integrity of the fiber membrane before and after catalysis after putting the tea bag.

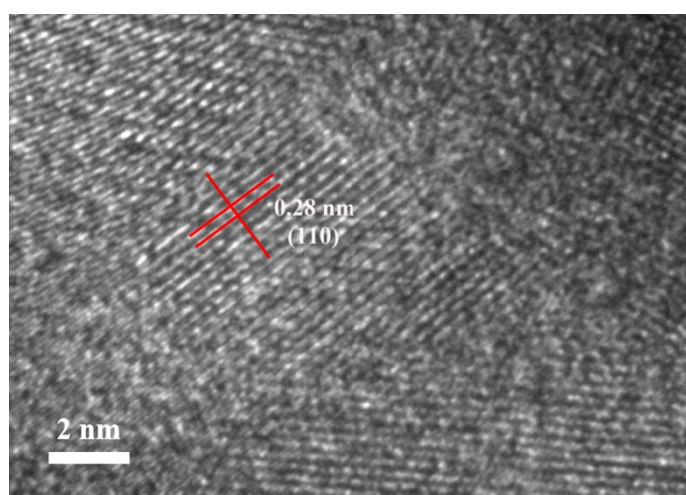


Fig. S7. HRTEM of BTO calcined at 850°C.