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

This copy of the ESI replaces the previous version published on 21 March 2023

Supplementary Information

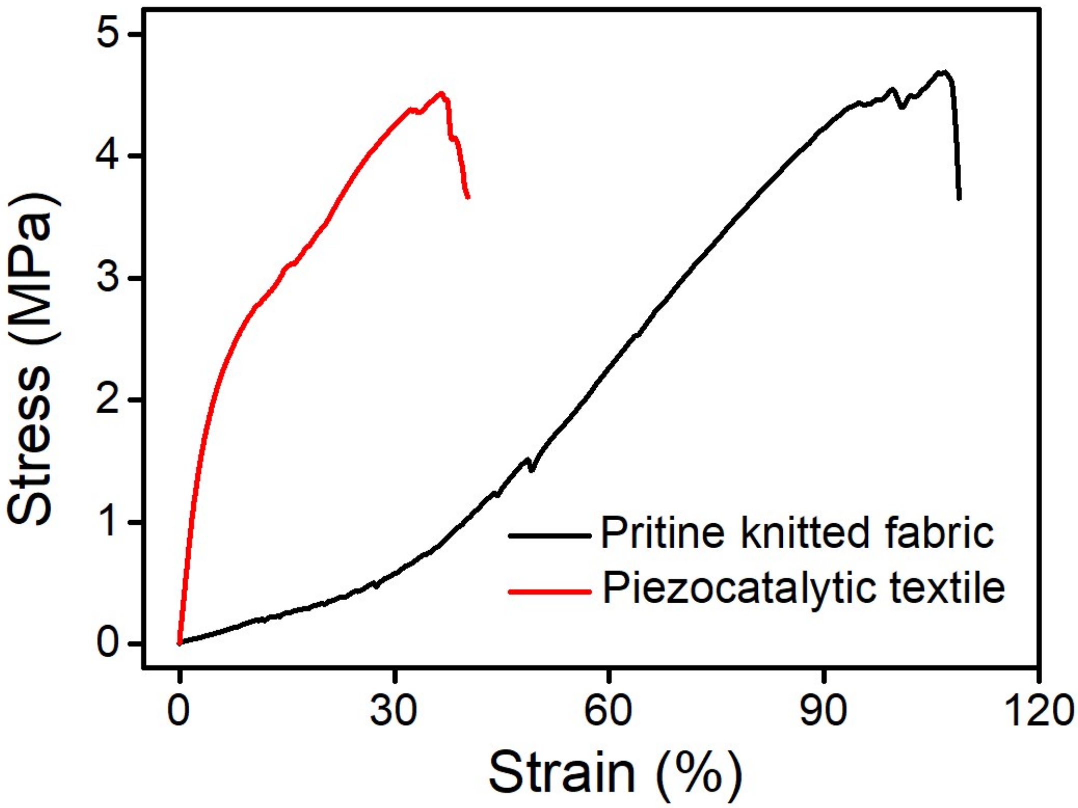

Fig. S1 The stress-strain curve of pristine knitted fabric and piezocatalytic textile.

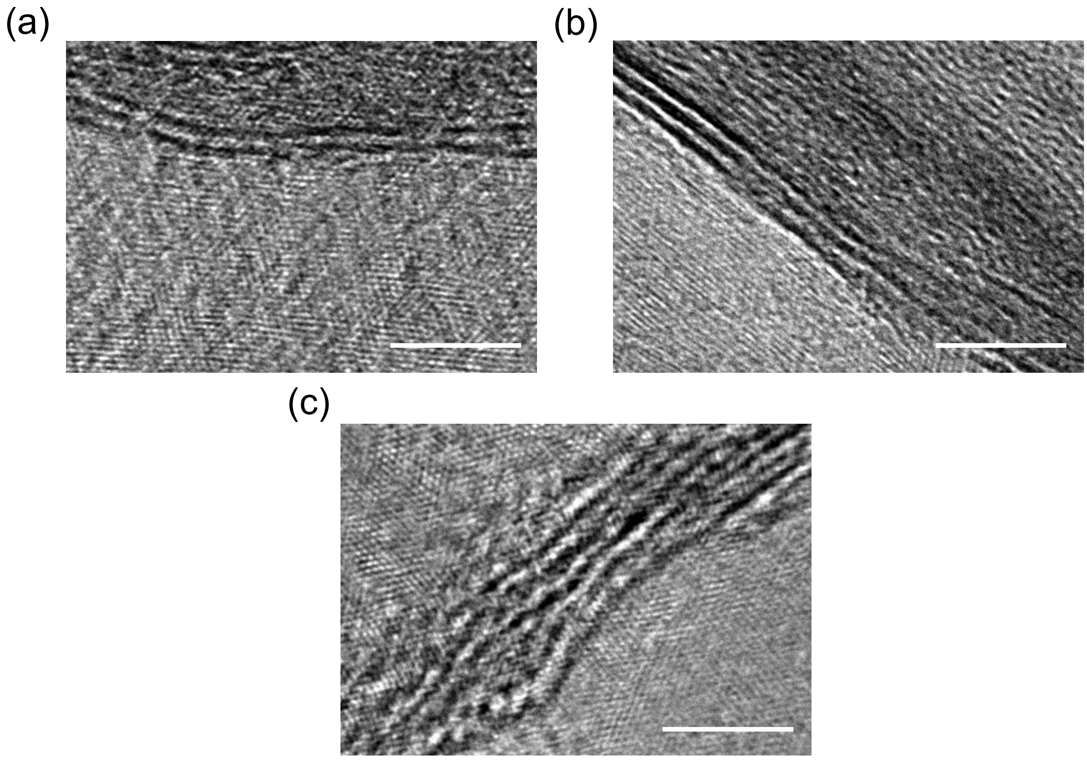

Fig. S2 Three representative HRTEM images taken at the edge of three MoS_2 nanoflakes, which are 2-layered (a), 3-layered (b) and 5-layered (c), respectively. Scale bar: 5 nm.

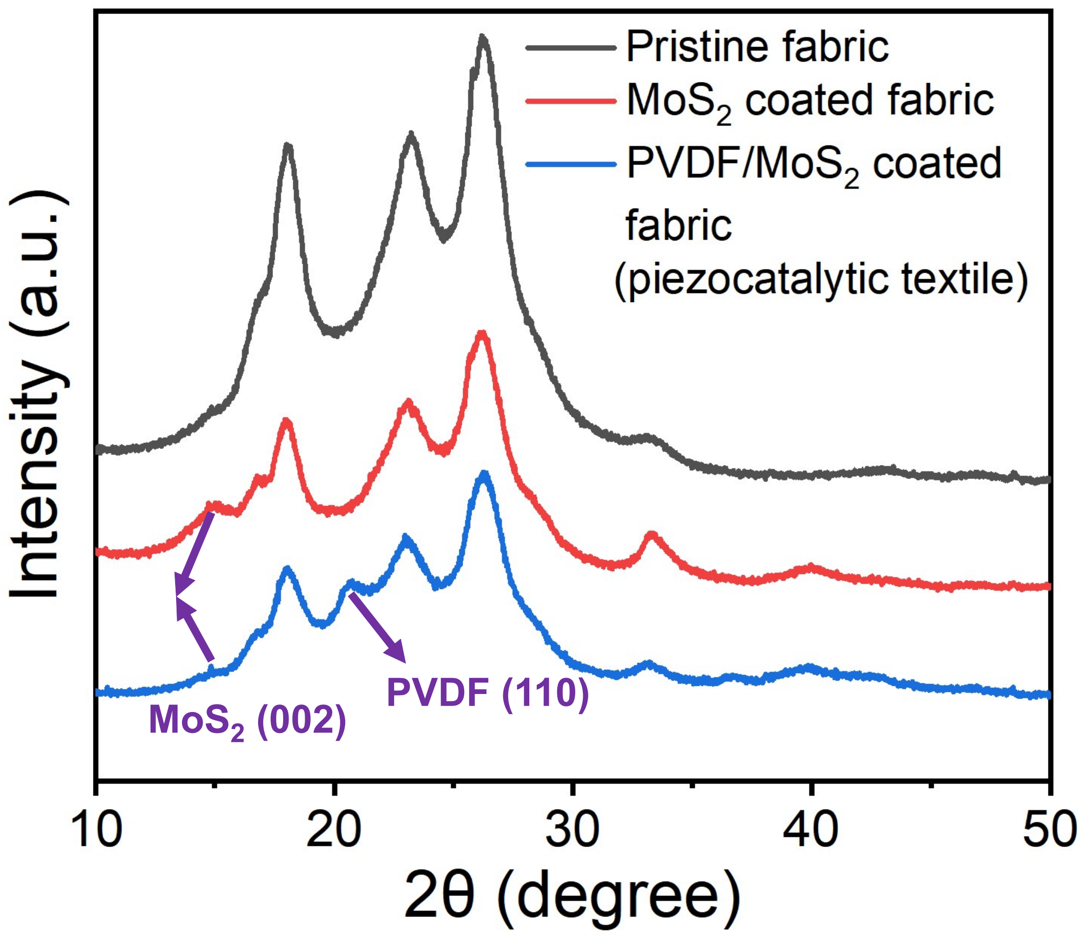

Fig. S3 The XRD spectra of pristine fabric, MoS_2 coated fabric and PVDF/MoS_2 coated fabric, with characteristic peaks marked by arrows. The coverage of PVDF leads to an attenuation of MoS_2 peak in PVDF/MoS_2 coated fabric sample.

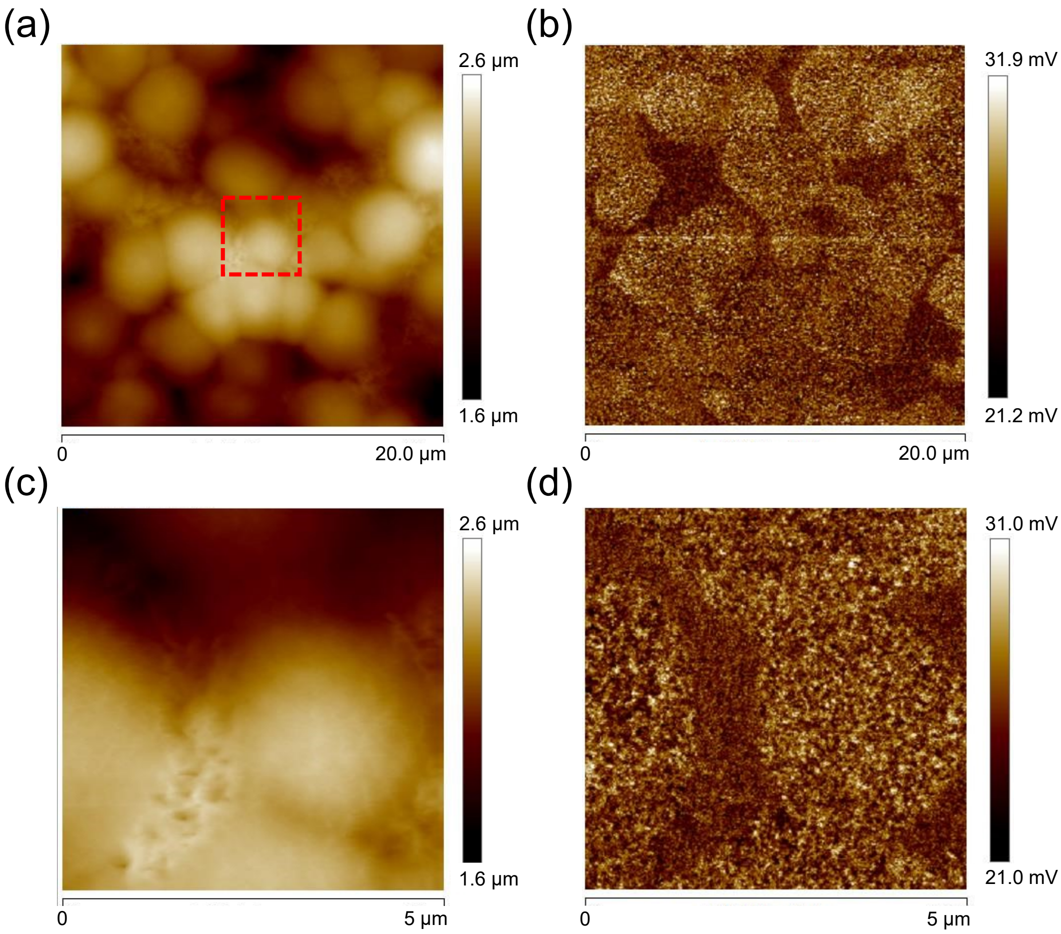

Fig. S4 The surface topography (a, c) and corresponding PFM amplitude (b, d) of MoS_2/PVDF film. Image (c) is the magnified view of (a) in framed region. Both the smooth PVDF nanoparticle and the rough surface of MoS_2 film have piezoelectric potential, validating the piezoelectricity of the two components.

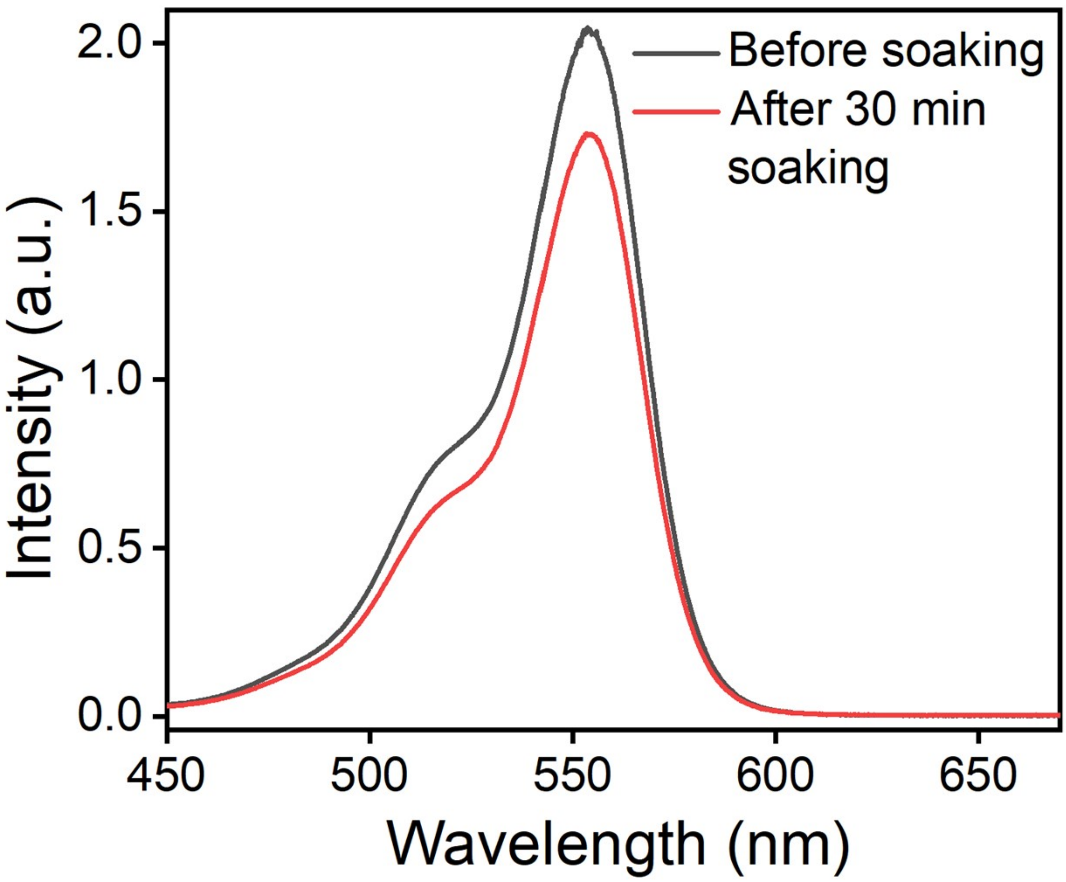

Fig. S5 The UV-vis spectrum of RhB solution before and after 30 minutes soaking of the piezocatalytic textile.

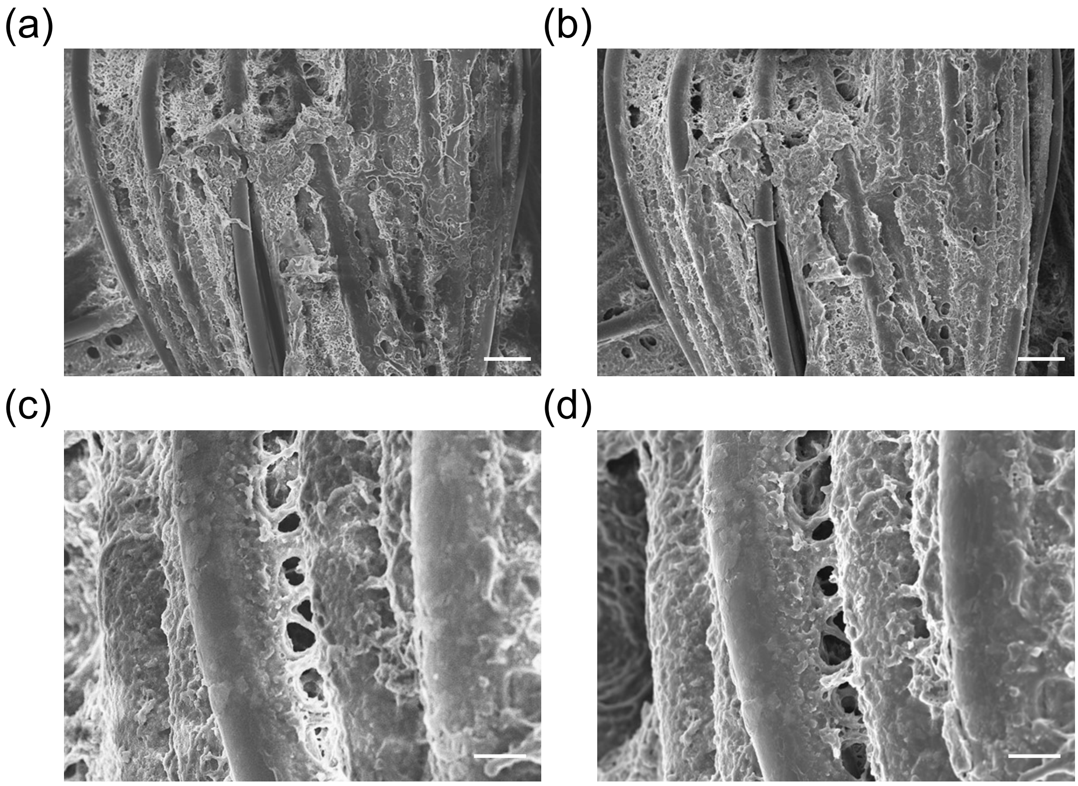

Fig. S6 The SEM images of the piezocatalytic textile before (a, c) and after (b, d) low-frequency vibration for 10 minutes. The scale bar for a and b: 40 μm. The scale bar for c and d: 10 μm.

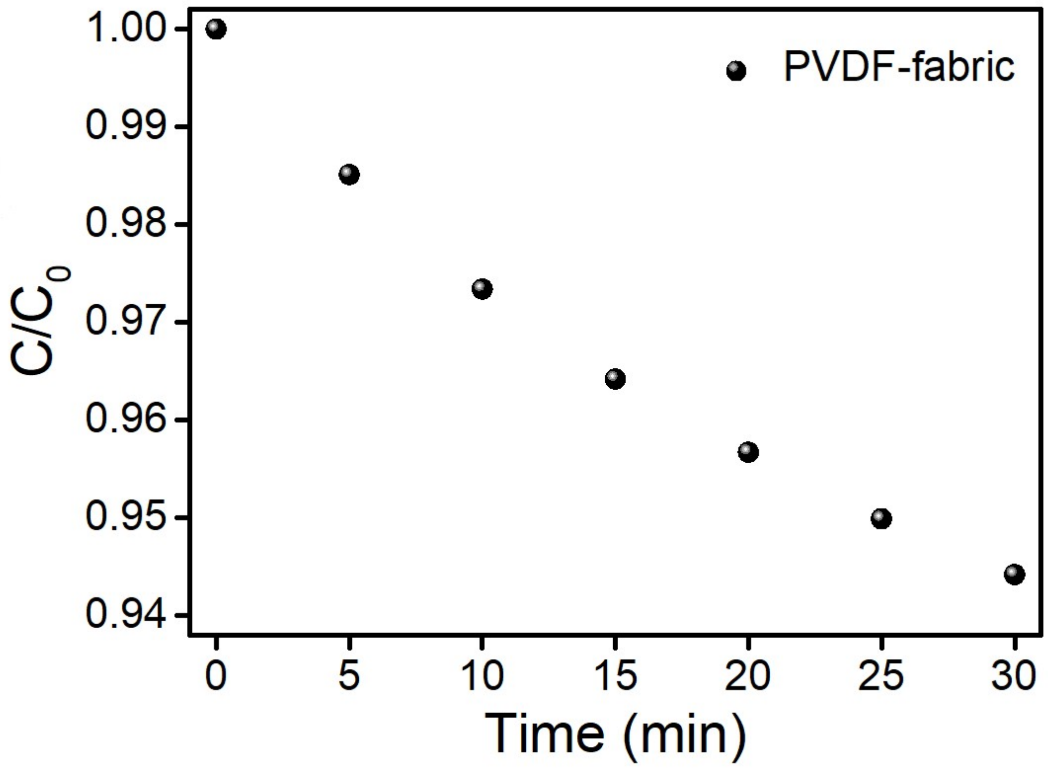

Fig. S7 The RhB degradation rate using the piezocatalytic platform based on PVDF-coated fabric.

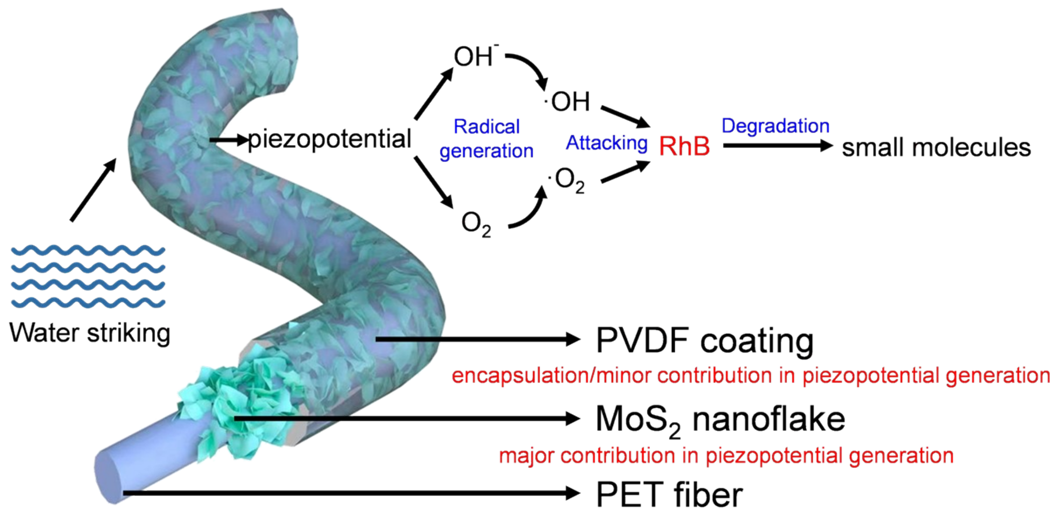

Fig. S8 Schematic illustration of the catalytic mechanism of the piezocatalytic textile.

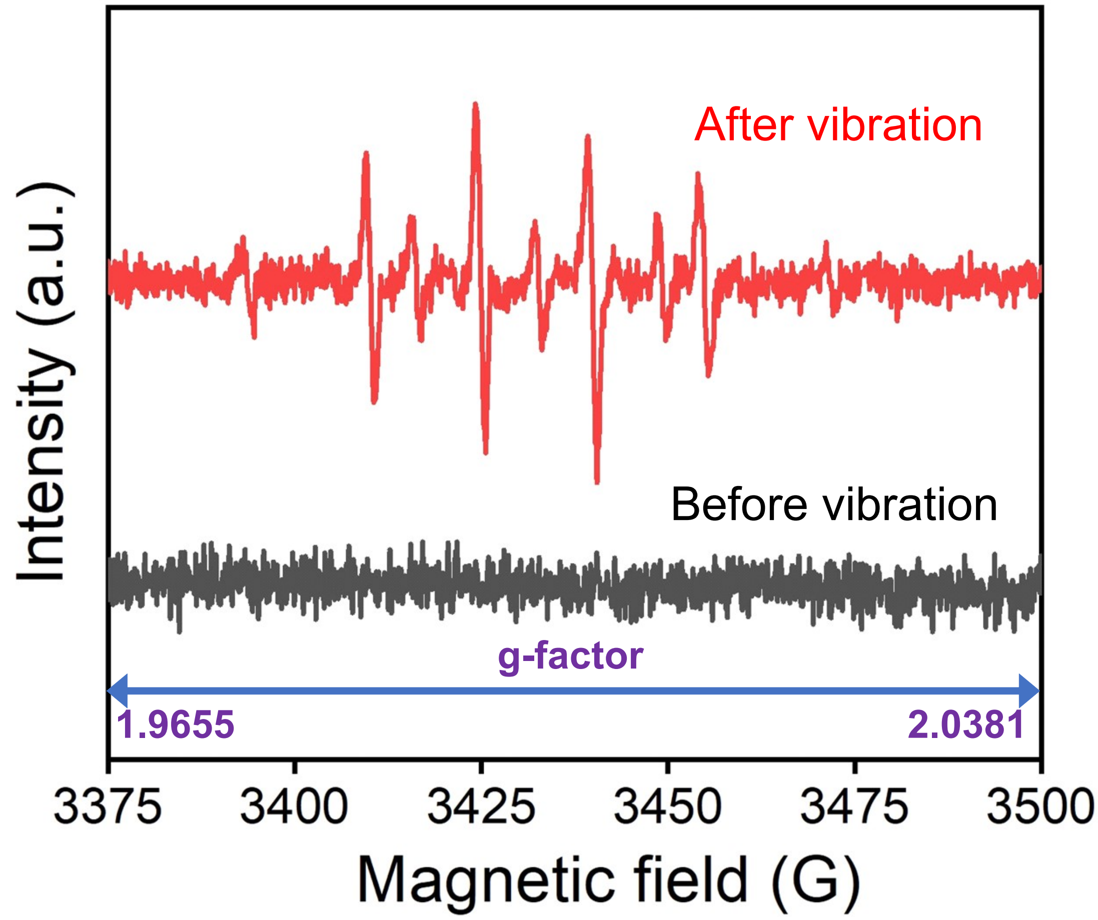

Fig. S9 The EPR spectra for detecting ·OH radical before and after 5 minutes low-frequency vibration.

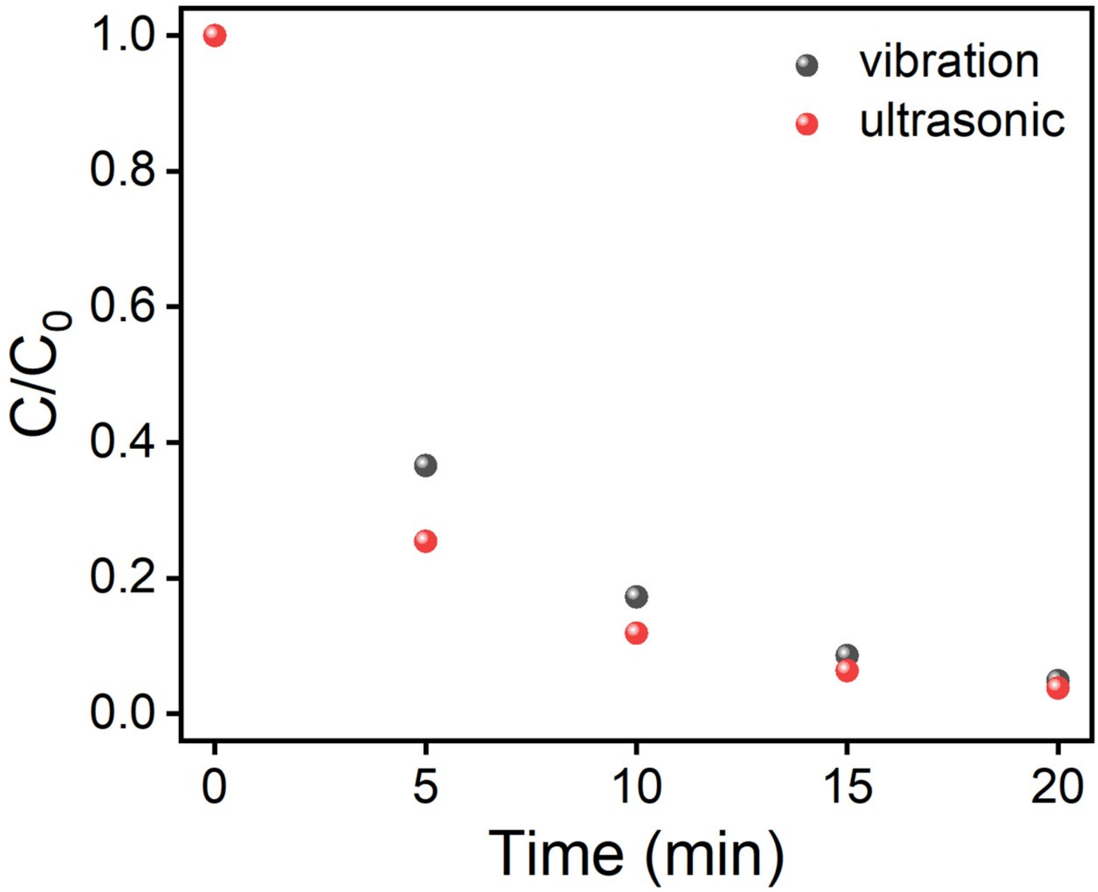

Fig. S10 The RhB degradation rate by vibration and ultrasonic treatment.

No.	**Materials/Structures**	**Target pollutant**	**Mechanical input**	**Efficiency**	**Reference**
1	$BaTiO_3$ nanofiber	RhB	Magnetic stirring (1000rpm)	33.8% degradation in 24h	ACS Appl. Mater. Inter., 2020, 12(15): 17443-17451
2	PVDF/$BaTiO_3$ foam	RhB	Orbital shaker (240 rpm)	45% degradation after 8h	Small Sci., 2021, 1(2), 2000011
3	$BaTiO_3$@Au nanoparticle	RhB	Magnetic stirring (1W, 800rpm)	Complete degradation in 6h	Nano Energy, 2021, 88, 106290
4	$BaTiO_3$ nanoparticle	Carbamazepine	Magnetic stirring (6.66mW), peroxymonosulfate addition	76.17% degradation after 3h	Chem. Eng. J., 2022, 441, 136116
5	MoS_2/Carbon fiber	RhB	Water flow (10L/min)	Complete degradation in	Nano Energy, 2022, 98, 107280

				40min	
6	Fe_2O_3/ PVDF-HFP foam	tetracycl ine	Magnetic stirring (1W, 300rpm)	53.7% degradatio n in 11h	J. Hazard. Mater., 2022, 430, 128446
7	CNT/$BaTiO_3$ film	carbama zepine	Magnetic stirring (2000rpm) peroxymonosulfate addtion	91.93% degradatio n in 120min	Chem. Eng. J., 2022, 449, 137826
8	$BaTiO_3$/PVDF foam	Bisphen ol A	Magnetic stirring (900rpm)	43.9% degradatio n in 12h	Nano Energy, 2022, 94, 106930
9	MoS_2/PVDF on woven fabric	RhB	Orbital shaker (240 rpm)	97.3% degradatio n in 30min	This work

Table S1 The comparison of efficiency for the non-ultrasonic driven piezocatalytic platforms in recent years. The references in red are from the same research group. Except for the discrepancies in target pollutants and mechanical input conditions, the dosage of piezocatalysts, the amount and concentration of pollutants, and even the types of containers for these works are dramatically different. As a result, it's difficult to directly compare the performance of different works. **We don't imply that the piezocatalytic textile in this work has the best performance among all these works, but should be considered among the highest rank in terms of degradation efficiency.** Together with the scalability and low cost in preparation, the piezocatalytic textile could be a promising candidate in water treatment.