

Supplementary Information

Removal of Reactive Dye and Hexavalent Chromium by Reusable Bacteria Attached Electrospun Nanofibrous Web

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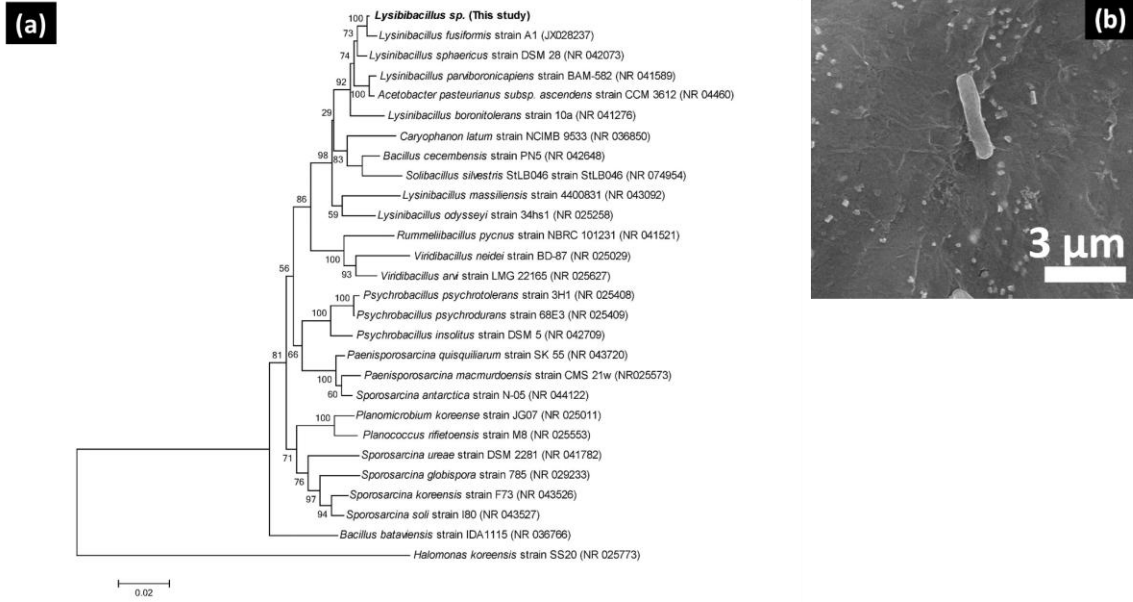


Figure S1. (a) Phylogenetic tree of the members of the genus *Lysinibacillus* sp., the strain NOSK and representatives of some other taxa based on 16S rRNA gene sequence comparisons (b) SEM micrograph of *Lysinibacillus* sp. NOSK.

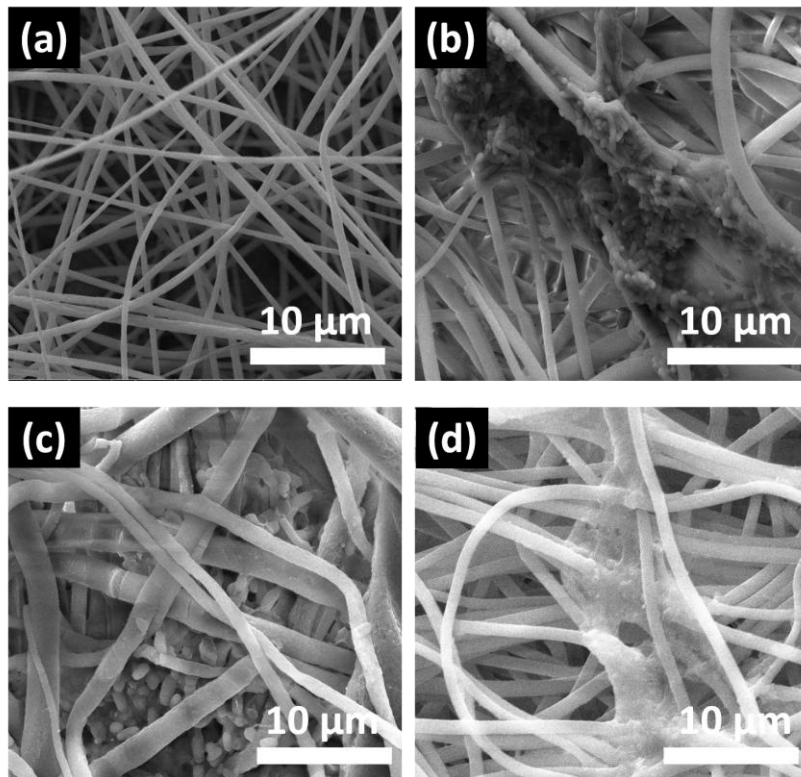


Figure S2. SEM images of PSU-NFW: (a) pristine PSU-NFW (b) after 24 h incubation, (b) after 7 days of incubation, and (c) after 15 days of incubation from the initiation of bacterial growth experiments in 50 mL liquid media (pH: 8.0; Temp: 30 ± 1 °C; stirring rate: 100 rpm).

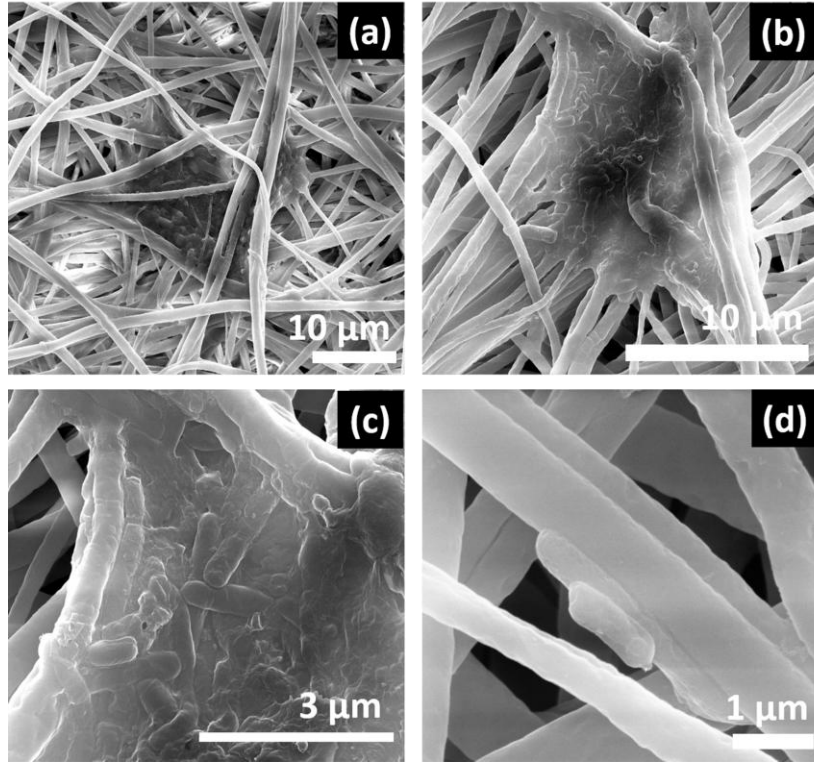


Figure S3. Representative SEM micrographs of the bacteria/PSU-NFW after the reusability tests (a) 5000 x magnification (b-c) 20.000 x magnification (d) 40.000 x magnification.

Table S1. Simultaneous effect of dye and Cr(VI) on bioaccumulation of pristine PSU-NFW and bacteria/PSU-NFW in the media containing 30 mg L⁻¹ of contaminants during the 24 h incubation period (pH: 8.0; Temp: 30±1 °C; stirring rate; 100 rpm).

Cr(VI)		Reactive Black 5	
C₀ (mg L⁻¹)	% Yield	C₀ (mg L⁻¹)	% Yield
15.4 ± 0.9	63 ± 0.9	30.9 ± 0.2	91.8 ± 0.2
51.3 ± 2.3	27.8 ± 0.4	30.4 ± 0.7	90.6 ± 0.7
100.8 ± 0.97	8.9 ± 2.3	30.2 ± 1.1	82.7 ± 1.1
30.3 ± 0.35	98.4 ± 0.9	15.2 ± 1.4	70 ± 1.4
30.5 ± 0.42	91.3 ± 0.4	50.3 ± 0.2	66.1 ± 0.2
30.2 ± 0.45	82.7 ± 0.6	100.6 ± 1.7	56.5 ± 1.7

Table S2. Adsorption kinetics coefficients of bacteria/PSU-NFW for each isotherm model (L-F: generalized Langmuir-Freundlich).

Contaminant	Isotherm	Parameters	Values	Ry² value	
Cr(VI)	Freundlich	Kf	5.52	0.972	
		1/n	1.02 x 10 ⁻⁶		
	Langmuir	Q _{max}	5.67	0.995	
		b	1.00		
	L-F	Q _{max}	5.67	0.995	
		b	1.00		
		1/n	1.00		
	Linear	Kp	0.049	0.769	
	Toth	Toth	Q _{max}	5.52	0.973
			b	0.99	
n			4.99		
RB5	Freundlich	Kf	4.66	0.575	
		1/n	0.59		
	Langmuir	Q _{max}	59.11	0.670	
		b	0.047		
	L-F	Q _{max}	59.21	0.669	
		b	0.047		
		1/n	1.00		
	Linear	Kp	1.18	0.490	
	Toth	Toth	Q _{max}	35.17	0.877
			b	0.058	
n			5.00		

Table 3. The R² values of zero, first, second and third order plots for the removal of Cr(VI) or RB5 by bacteria/PSU-NFW.

Contaminant	Model	R² values
Cr(VI)	zero order	0.8687
	first order	0.9850
	second order	0.7863
	third order	0.7258
RB5	zero order	0.9594
	first order	0.8417
	second order	0.7221
	third order	0.7182