

Supporting Information

Dual Cross-linked Biodegradable Polyelectrolyte Hydrogel Actuator for Bi-Directional pH-Responsive Drug Release

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Table S1: Absorbance values of standard solutions of NEO

S. No	Conc. mg/mL	Mean Absorbance (n=3)	SD
1	1	0.0283	0.0045
2	3	0.086	0.0101
3	5	0.126	0.0017
4	7	0.162	0.0162
5	9	0.222	0.0017
6	11	0.268	0.007

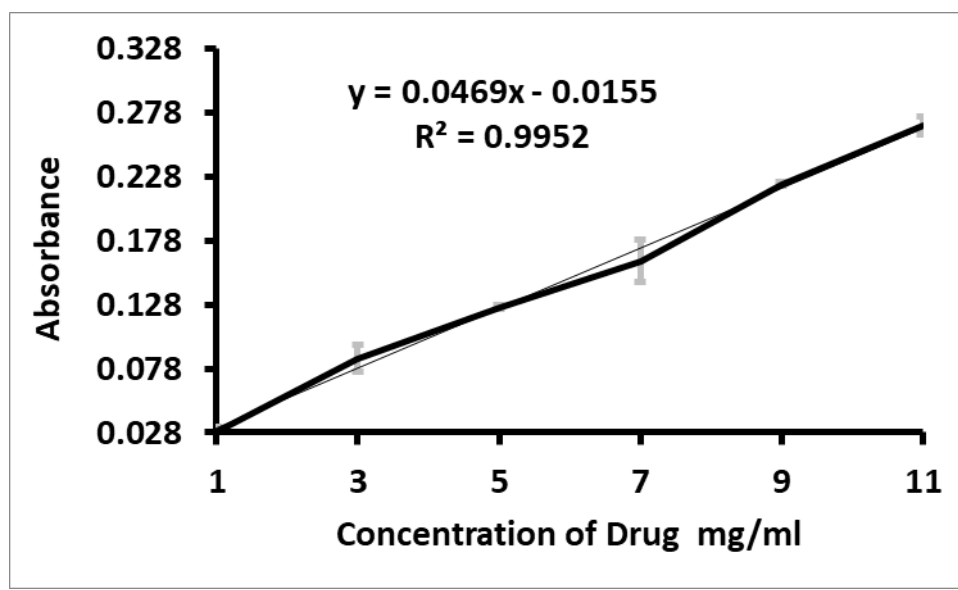


Figure S1: Standard curve of Neomycin Sulphate (NEO) in distilled water.

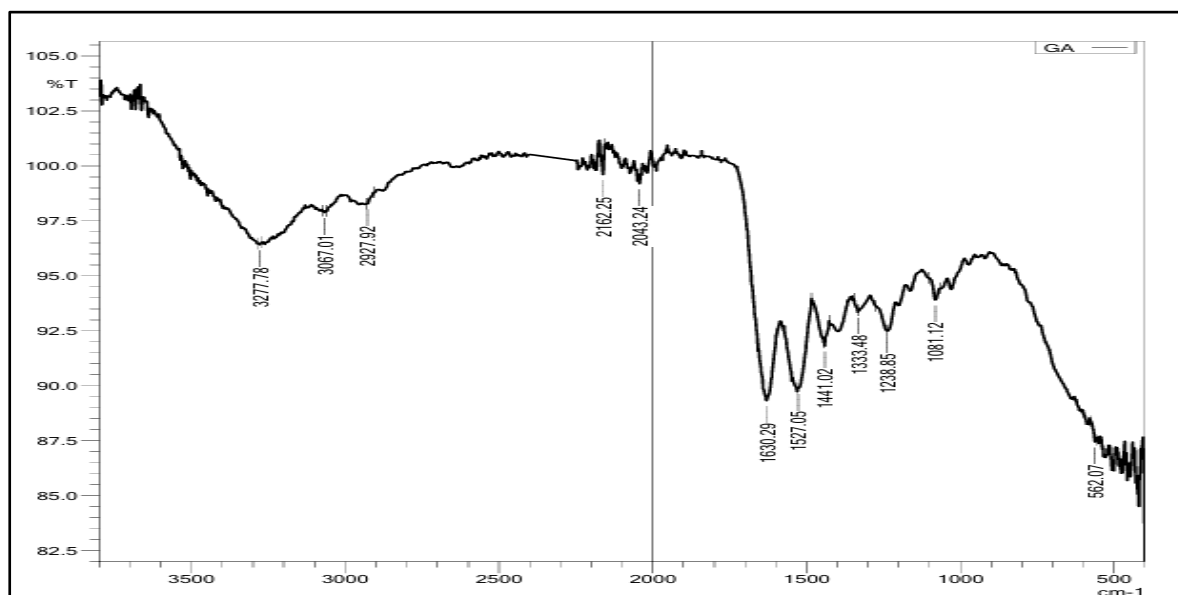


Figure S2: FTIR spectrum of gelatin (with KBr)

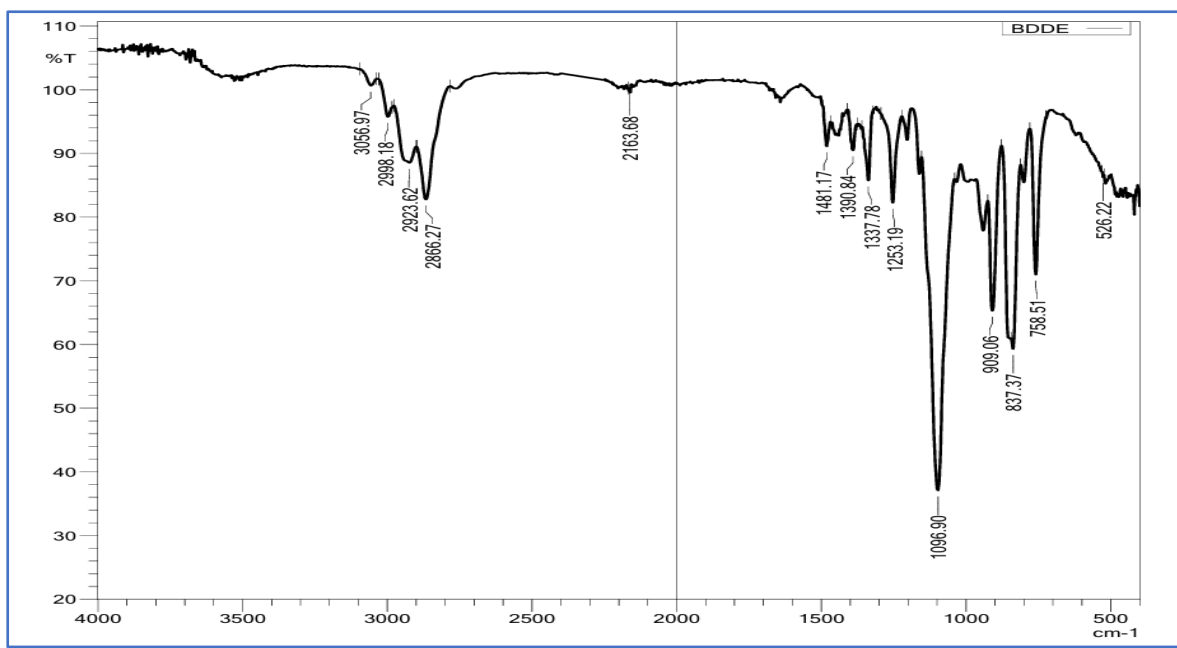


Figure S3: FTIR spectrum of BDDE (as a film on NaCl window)

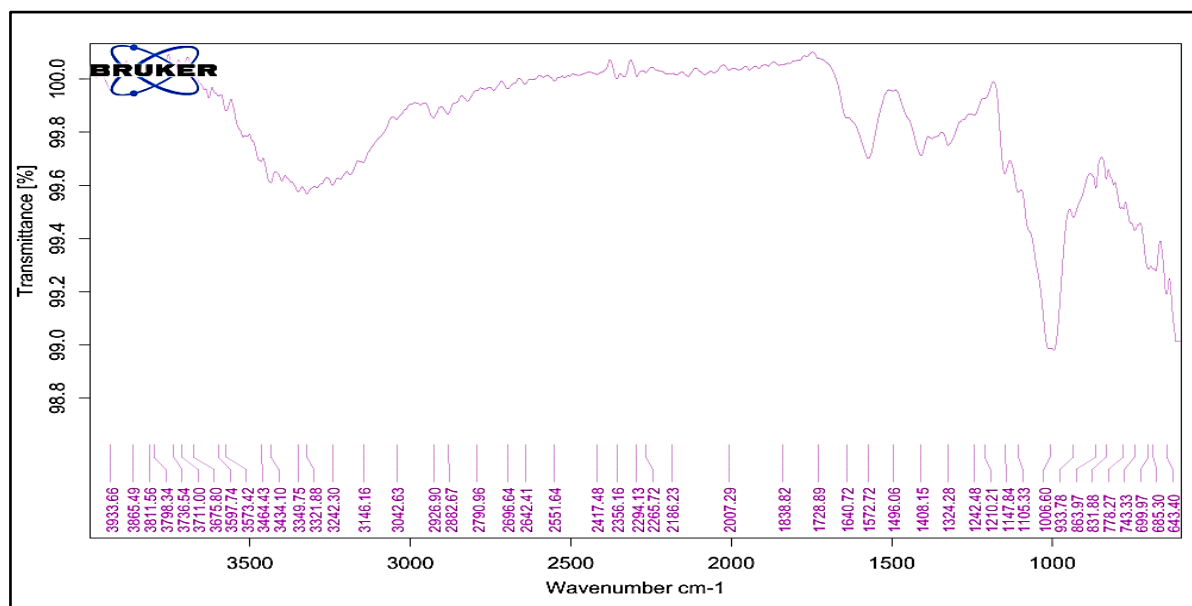


Figure S4: FTIR spectrum of CMC (with KBr)

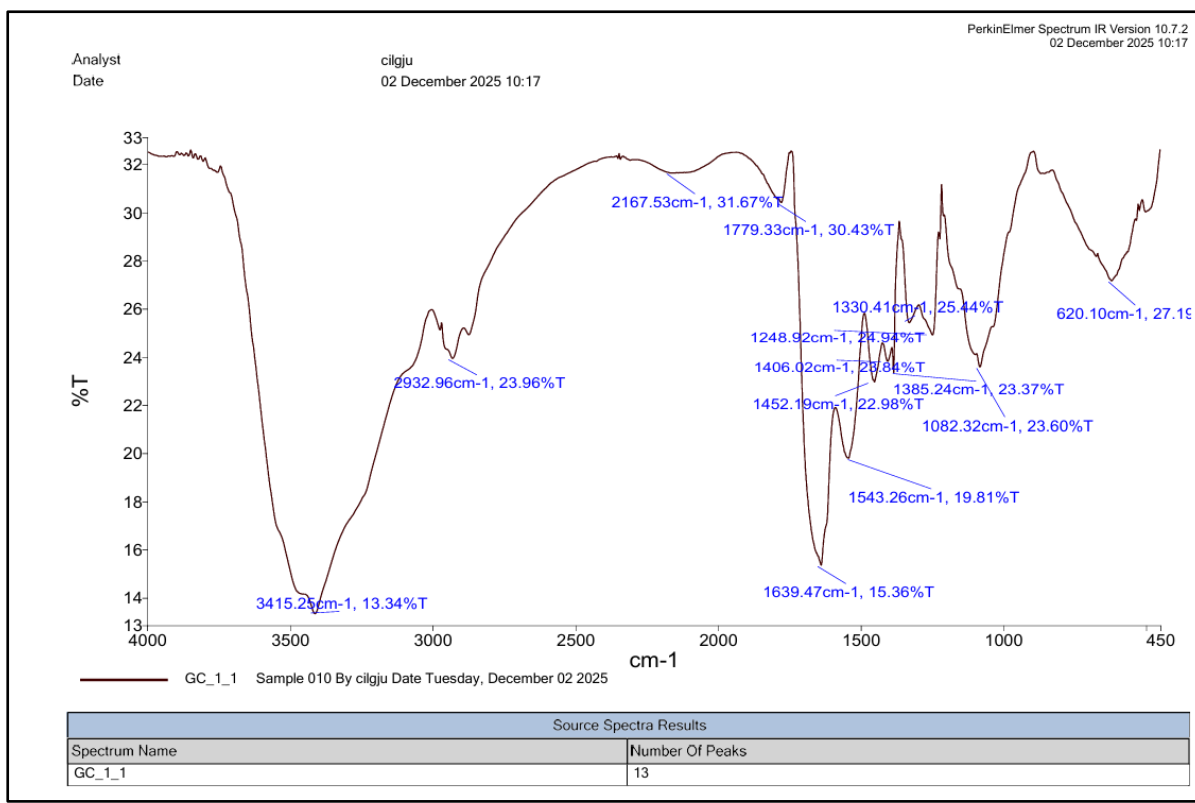


Figure S5: FTIR spectrum of hydrogel (with KBr)

Table S2: Result analysis of FTIR spectrum of gelatin, BDDE and CMC from figure no. S2, S3 and S4 respectively.

Functional Groups	CMC		Gelatin		BDDE	
	Ref. ¹ (IR Peaks); cm ⁻¹	Sample (IR Peaks); cm ⁻¹	Ref. ² (IR Peaks); cm ⁻¹	Sample (IR Peaks); cm ⁻¹	Ref. ³ (IR Peaks); cm ⁻¹	Sample (IR Peaks); cm ⁻¹
O-H	3202	3242				
C-H	2922-2872	2926	2950-2850	2927		
CH ₂					2973	2998
N-H	3400-3250	3349				
Amide -A			3433	3277		
C=O (Amide I)			1630	1630		
C-O-C	1107-1039	1050-1100			990	1096
COO	1587	1572				
N-H (Amide II)			1565	1527		
C-N (Amide III)			1240	1238		

Table S3: Result analysis of FTIR spectrum of hydrogel figure no. S5

Functional Groups	CMC-BDDE		Gelatin-BDDE	
	Ref. ⁴ (IR Peaks); cm ⁻¹	Sample (IR Peaks); cm ⁻¹	Ref. ⁵ (IR Peaks); cm ⁻¹	Sample (IR Peaks); cm ⁻¹
O-H	3398	3415		
CH ₂	2909	2932		
C-O-C	1065	1082		
C-O (Ester)	1735 -1770	1779		
Amide A			1700-1600	1639
Amide I C-O Stretching			1565-1520	1543
Amide II N-H Bending			1240-670	1082
Amide III vibration of C-N Stretching			3500-3000	3415
Alkane C-H Stretching	3000-2800	2950-2850	3000-2800	2950-2850
Secondary amines N-H Stretching	Merging of OH stretching of CMC with sec. amines N-H stretching		3500-3300	3440-3350

References:

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