

Supplementary Data

**Polyurethane-Chitosan Brush as Injectable Hydrogel for Controlled Drug  
Delivery and Tissue Engineering**

**Arun Kumar Mahanta, Sudipta Senapati and Pralay Maiti\***

**Figure S1:** Complete FTIR spectra of chitosan and its indicated copolymers in the range of 3800-700  $\text{cm}^{-1}$ .

**Figure S2:** XRD patterns of pure CHT, Pure PU and the indicated graft copolymers.

**Figure S3:** Pore size distribution of lyophilized hydrogel scaffold of pure chitosan and its indicated copolymers.

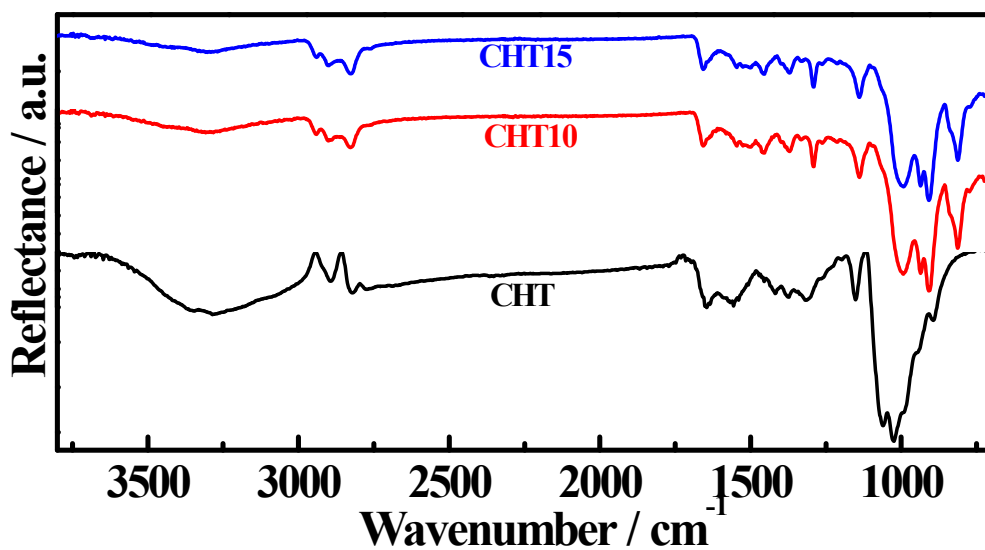
**Figure S4:** Deswelling profile of swollen dried hydrogel film of pure CHT and its indicated copolymers.

**Figure S5:** (a) and (b) represent the modulus and toughness of the lyophilized hydrogel scaffold of Pure CHT and its indicated copolymers.

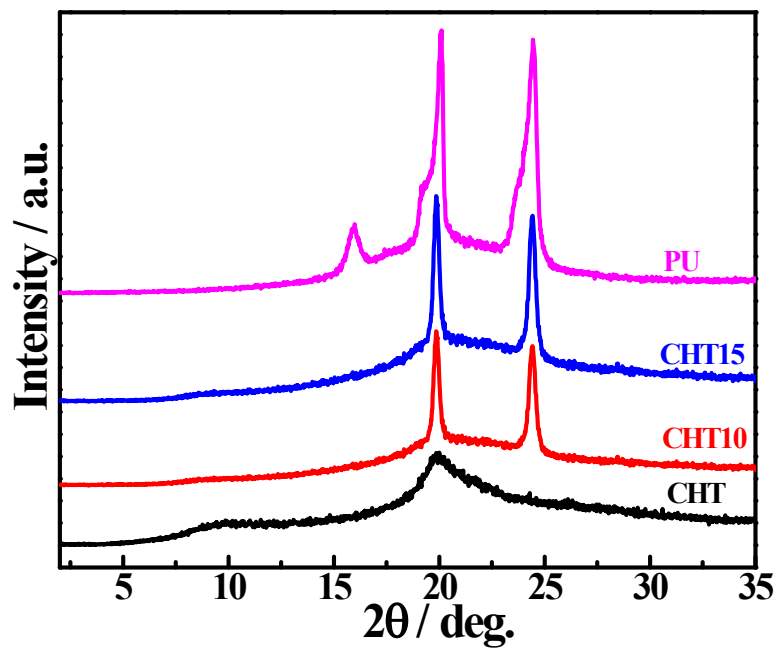
**Table S6:** Release rate constant ( $k$ ), correlation coefficient ( $r^2$ ) and diffusion release exponent ( $n$ ) obtained using different mathematical model from the drug release kinetics using hydrogel (a) and scaffold (b) of pure chitosan and its indicated copolymers.

**Figure S7:** FTIR spectra of pure drug, pure chitosan and graft copolymers along with their corresponding drug embedded sample. Asterisks mark indicates the peak position.

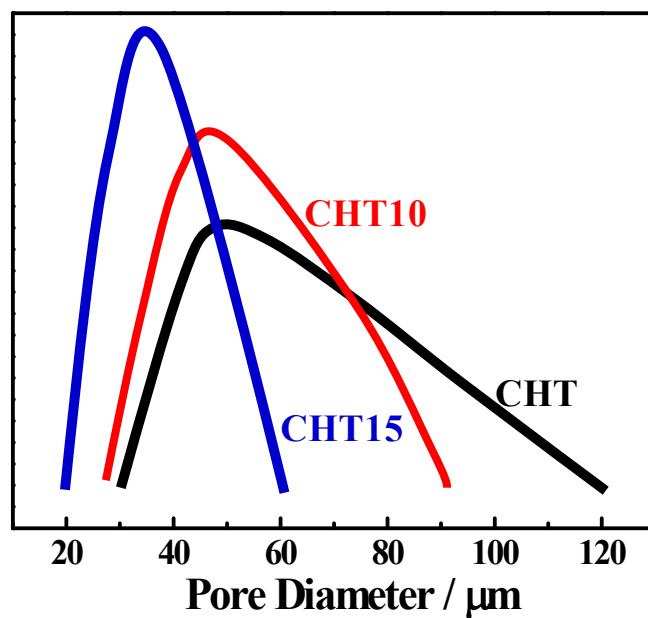
**Figure S8:** (a) DSC thermogram of chitosan and graft copolymers along with their corresponding drug loaded sample. (b) DSC thermogram of pure antibiotic drug, tetracycline hydrochloride.



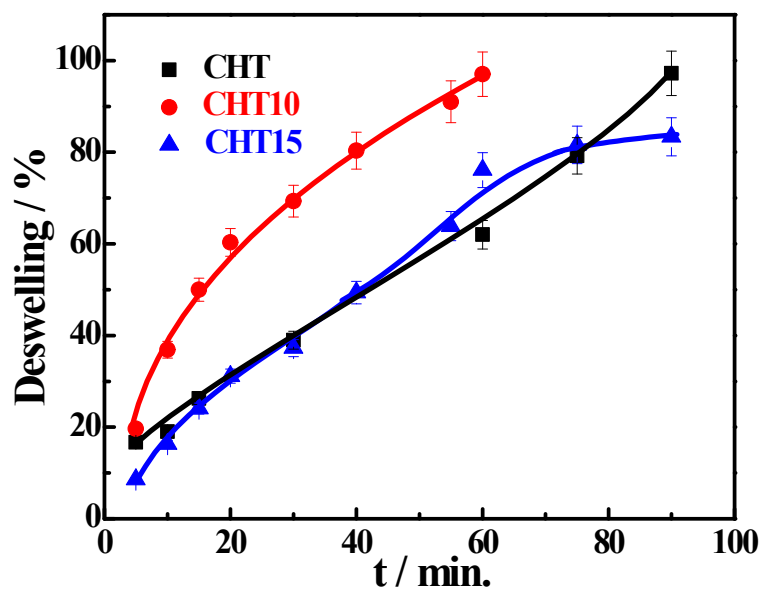
**Figure S1:** Complete FTIR spectra of chitosan and its indicated copolymers in the range of 3800-700 cm<sup>-1</sup>.



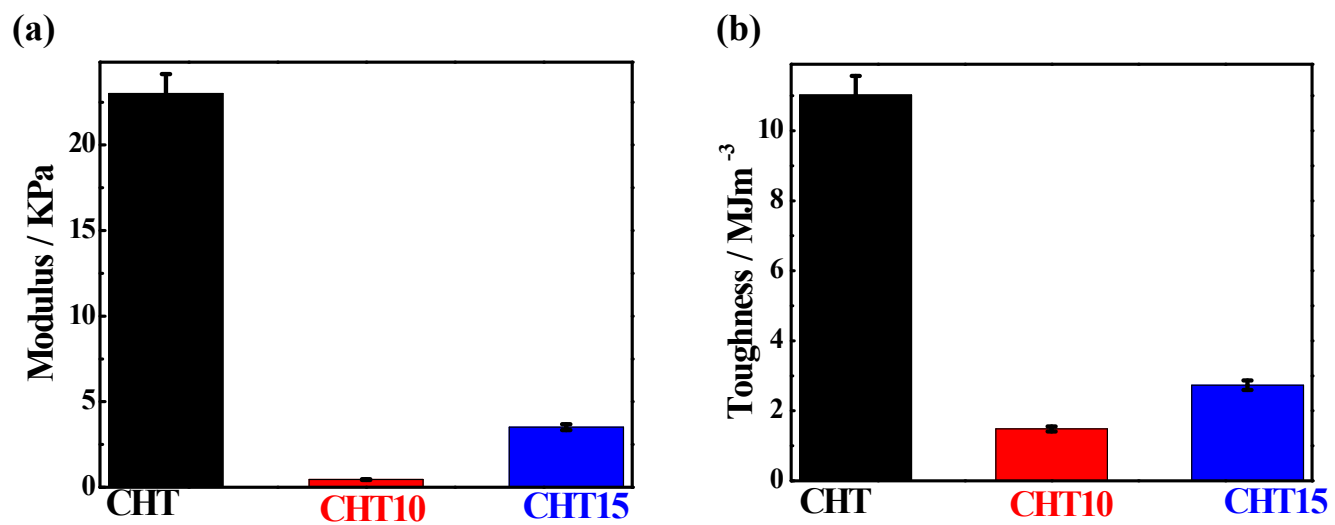
**Figure S2:** XRD patterns of pure CHT, Pure PU and the indicated graft copolymers.



**Figure S3:** Pore size distribution of lyophilized hydrogel scaffold of pure chitosan and its indicated copolymers.



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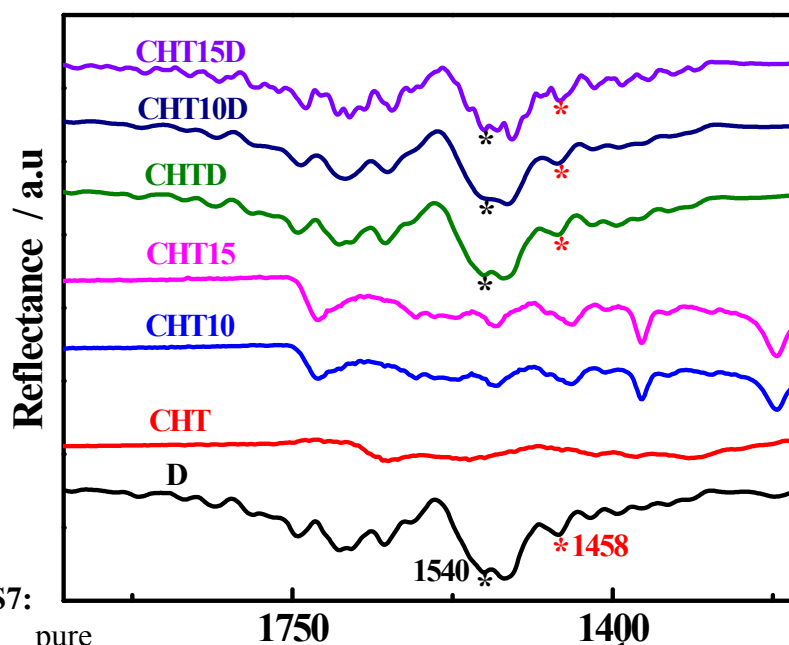
(a)

Sample	Zero Order		First Order		Higuchi		Korsmeyer-Peppas	
	<i>K</i>	<i>r</i> <sup>2</sup>	<i>K</i>	<i>r</i> <sup>2</sup>	<i>K</i>	<i>r</i> <sup>2</sup>	<i>n</i>	<i>r</i> <sup>2</sup>
CHT	4.26 ± 0.76	0.88	0.051 ± 0.012	0.79	16.04 ± 2.39	0.91	0.40 ± 0.002	0.98
CHT10	2.59 ± 0.66	0.78	0.043 ± 0.013	0.70	9.82 ± 2.20	0.71	0.35 ± 0.008	0.99
CHT15	1.60 ± 0.24	0.91	0.036 ± 0.007	0.84	6.11 ± 0.40	0.70	0.28 ± 0.009	0.99

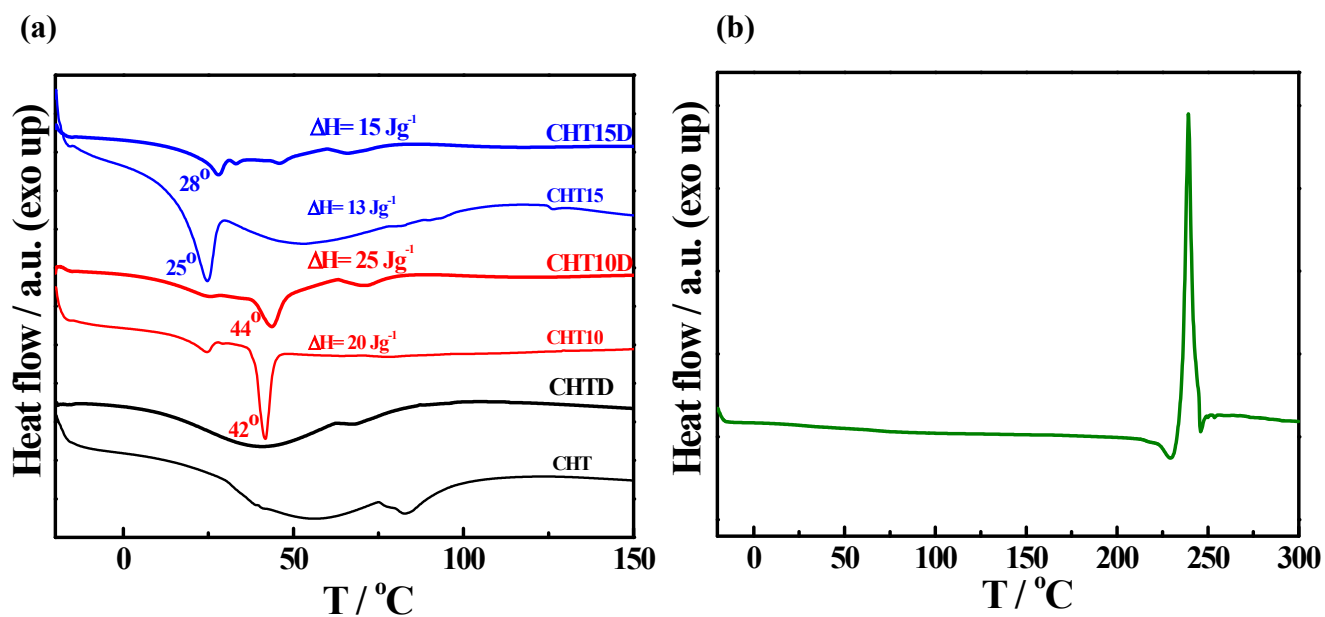
(b)

Sample	Zero Order		First Order		Higuchi		Korsmeyer-Peppas	
	<i>K</i>	<i>r</i> <sup>2</sup>	<i>K</i>	<i>r</i> <sup>2</sup>	<i>K</i>	<i>r</i> <sup>2</sup>	<i>n</i>	<i>r</i> <sup>2</sup>
CHT	8.74 ± 0.89	0.95	0.064 ± 0.009	0.91	28.78 ± 1.05	0.87	0.38 ± 0.006	0.99
CHT10	6.19 ± 0.64	0.95	0.054 ± 0.008	0.91	20.39 ± 0.8	0.91	0.32 ± 0.006	0.99
CHT15	4.23 ± 0.51	0.94	0.049 ± 0.007	0.90	13.98 ± 0.82	0.74	0.29 ± 0.008	0.99

**Table S6:** Release rate constant (*k*), correlation coefficient (*r*<sup>2</sup>) and diffusion release exponent (*n*) obtained using different mathematical model from the drug release kinetics using hydrogel (a) and scaffold (b) of pure chitosan and its indicated copolymers.



**Figure S7:** FTIR spectra of pure drug, pure chitosan and graft copolymers along with their corresponding drug embedded sample. Asterisks mark indicates the peak position.



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