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Supplementary Information

Preparation of novel magnetic cellulose nanocrystal and its efficient use for enzyme immobilization

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1 Supplementary Table

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Table S1 The preparation conditions of the MCNCs.

Sample	$W(FeCl_2 \cdot 4H_2O)(g)$	$W(FeCl_3 \cdot 6H_2O)(g)$	W(Chitosan)(g)	W(TPP)(g)
MCNC-1	1.34	3.40	0.60	1.20
MCNC-2	2.68	6.80	0.60	1.20
MCNC-3	2.68	6.80	1.20	2.40
MCNC-4	5.36	13.60	0.60	1.20
MCNC-5	5.36	13.60	0.15	0.30
MCNC-6	5.36	13.60	2.40	4.80

Table S2 TGA and VSM results of the MCNCs.

Sample	Weight loss (%)	Fe_3O_4 content (%)	M_s (emu/g)
MCNC-1	69.5	16.9	0.74
MCNC-2	65.5	24.6	1.06
MCNC-3	66.3	18.7	1.19
MCNC-4	59.0	34.2	5.91
MCNC-5	57.3	40.7	16.72
MCNC-6	55.8	24.5	0.44

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Table S3 Assay of biocompatibility of MCNCs with papain [a].

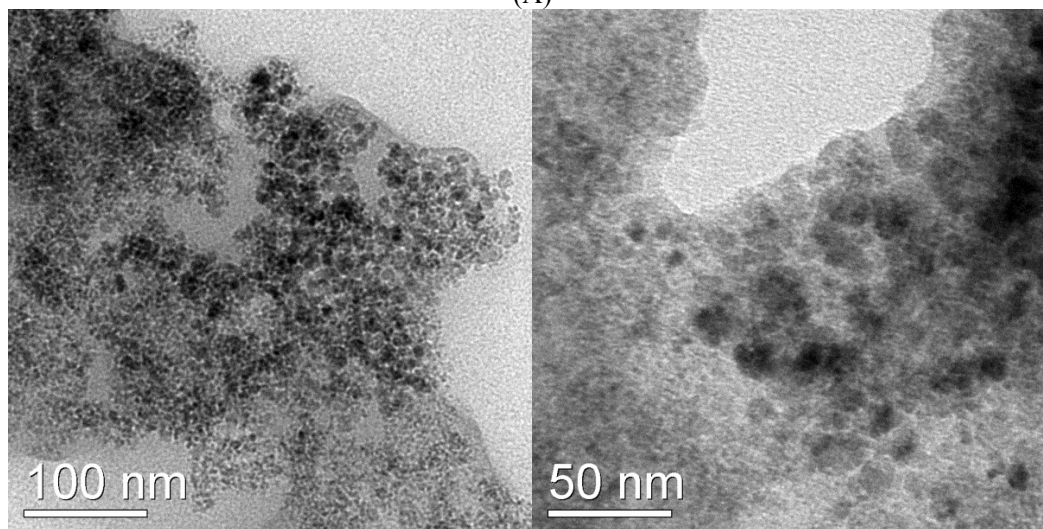| Sample	Amount of MCNCs (mg)	Relative activity of papain (%)
1	0	100.0
2	25	99.2
3	50	98.6
4	75	98.0
5	100	97.2
6	125	96.7
7	150	96.1

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2 Supplementary Figure

10   **Figure S1** Transmission electron micrographs of the (A) MCNCs and (B) Fe_3O_4 NPs coated with chitosan.[a]
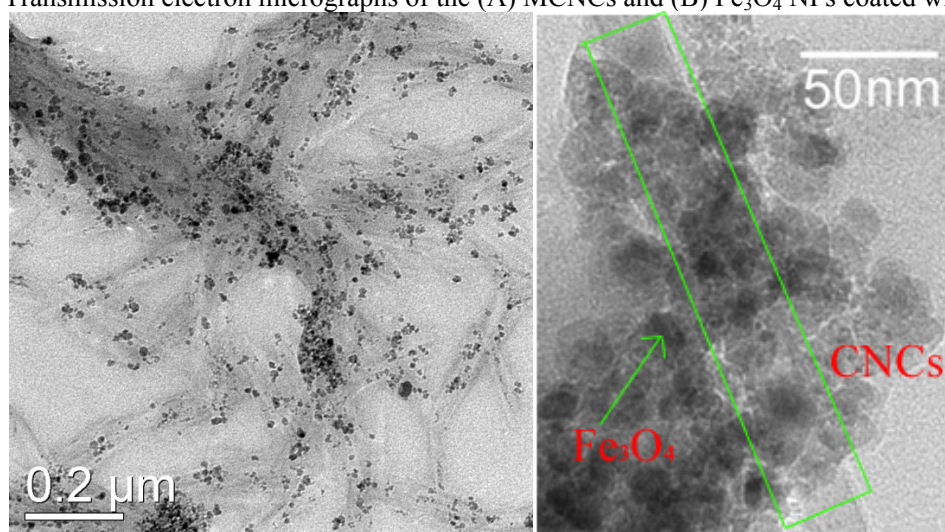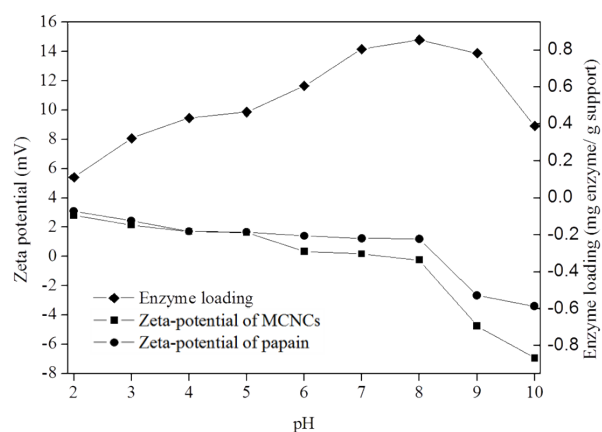

(A)

(B)

15 [a]: Transmission electron microscopy micrographs were obtained by a JEOL JEM-2010 TEM operating at 200kV. A 10 μL drop of well-dispersed MCNCs suspension was dried on a 300 mesh Support Film on Double Folding Grids (Beijing Zhongjingkeyi Technology Co., Ltd., China) and analyzed.

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