

Supporting Information

for

Design of enzyme immobilized polymer-brush-grafted magnetic nanoparticles for efficient degradation of biomaterials

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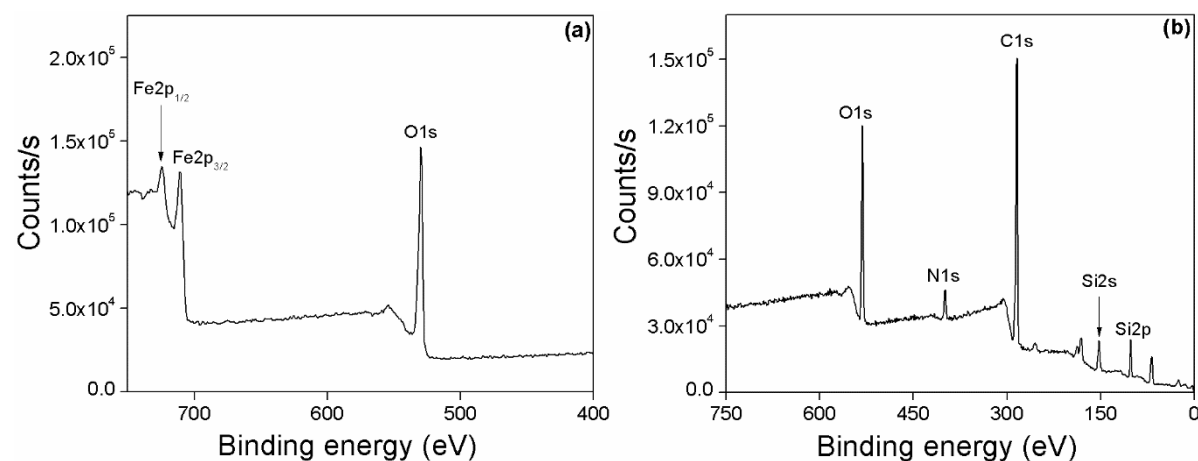


Figure SI-1: XPS survey scan of bare MNPs (a) and MNPs-NH₂ (b).

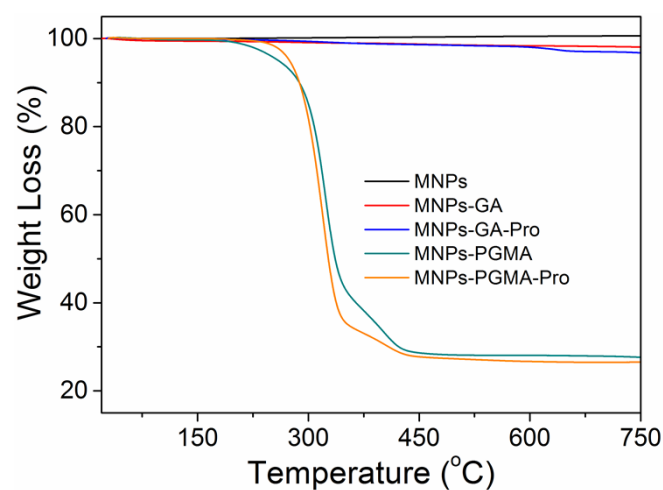


Figure SI-2: Thermograms of bare MNPs, MNPs-GA, MNPs-GA-Pro, MNPs-PGMA, and MNPs-PGMA-Pro.

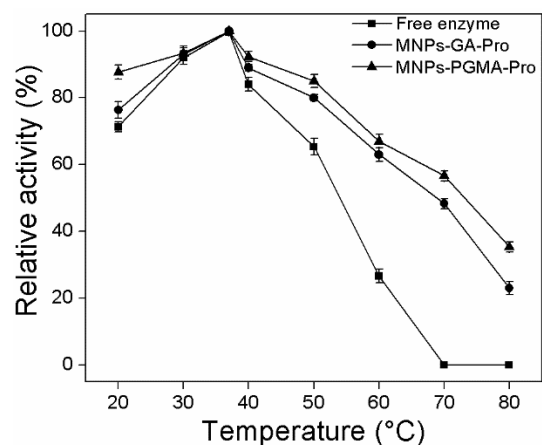


Figure SI-3: Effect of temperature on the activity of free and immobilized protease enzyme.

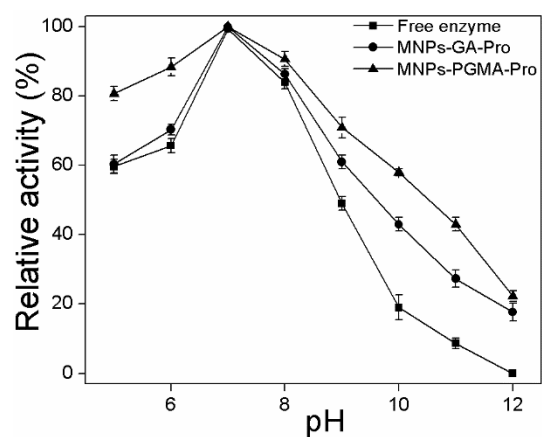


Figure SI-4: Effect of pH on the activity of free and immobilized protease enzyme (against casein)

Table SI-1: Mortality rate (%) of nematodes with *Haemonchus contortus* (mean of three experiments).

Sample	Activity U/mL	Mortality rate (%)			
		12 h	24 h	36 h	48 h
Control*	0	0	0	1 ± 0	1 ± 0
Bare MNPs	0	0	3 ± 0.50	3 ± 0.50	12 ± 0.5
MNPs-GA	0	0	2 ± 1.50	5 ± 1.50	16 ± 0.1
MNPs-GA-Pro	45.27 ± 0.07	32 ± 0.50	44 ± 2.00	62 ± 0.50	84 ± 0.2
MNPs-PGMA-Pro	47.6 ± 0.63	54 ± 2.60	78 ± 0.50	94 ± 1.70	94 ± 1.0

* Sample without enzyme

Table SI-2: Charge and hydrodynamic radius of MNPs

Sample	Zeta Potential (mV)	Hydrodynamic Radius (nm)
MNPs-GA	-11.67 ± 1.13	3407 ± 135
MNPs-GA-Pro	-14.11 ± 1.02	281 ± 22
MNPs-PGMA	-10.24 ± 0.75	6118 ± 174
MNPs-PGMA-Pro	-17.20 ± 1.05	651 ± 64

References:

- 1 C.E McDonald and L. L. Chen, *Anal Biochem* 1965, **10**, 175.