Supporting Information

Adsorption of Cd (II) from aqueous solution by biogenic selenium nanoparticles

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UV–vis spectrophotometer (Beijing Purkinje General Instrument Co., Ltd., China TU-1901) was used to collect the adsorption spectra of the BioSeNPs at a wavelength range of 200-800 nm at an interval of 1 nm. As shown in Fig.S3, the UV–visible spectrometric analysis the absorbance peak of BioSeNPs was appeared at 280 nm (the absorption peak of protein)[1], it is fit with previous researches that protein play a key role in the SeO_3^{2-} reduction[2]. Another study had investigated the presence of extracellular polymeric substances (EPS) on BioSeNPs and examined the role of EPS in capping the extracellularly available BioSeNPs[3]. The presence of EPS or protein reasonable explains the existence of C, O, N when in XPS analysis.

Figure Captions

Fig.S1 SEM image of BioSeNPs

Fig.S2 The general scan spectrum of (a) BioSeNPs and (b) Cd-loaded BioSeNPs

Fig.S3 UV-vis spectrum of BioSeNPs

Fig.S4 N 1s spectra of (a) BioSeNPs and (b) Cd-loaded BioSeNPs

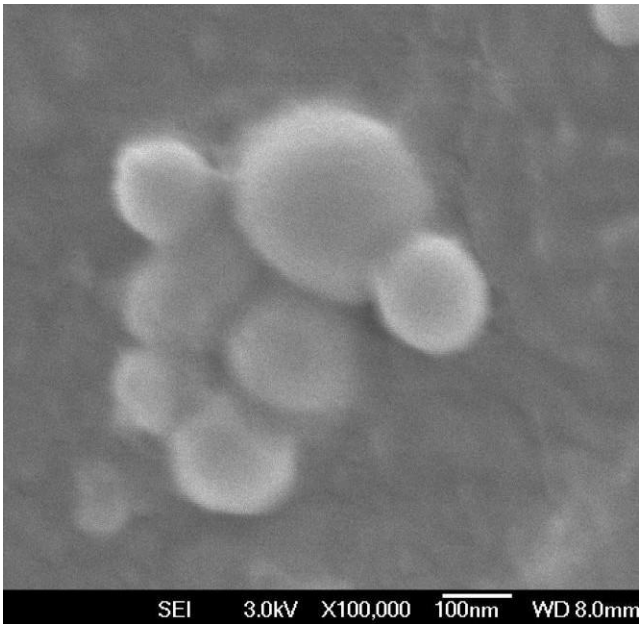


Fig.S1

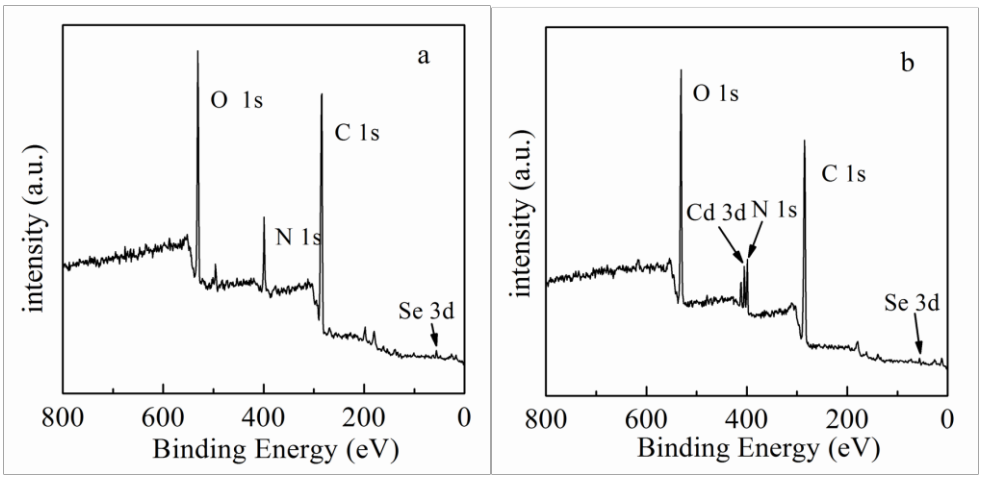
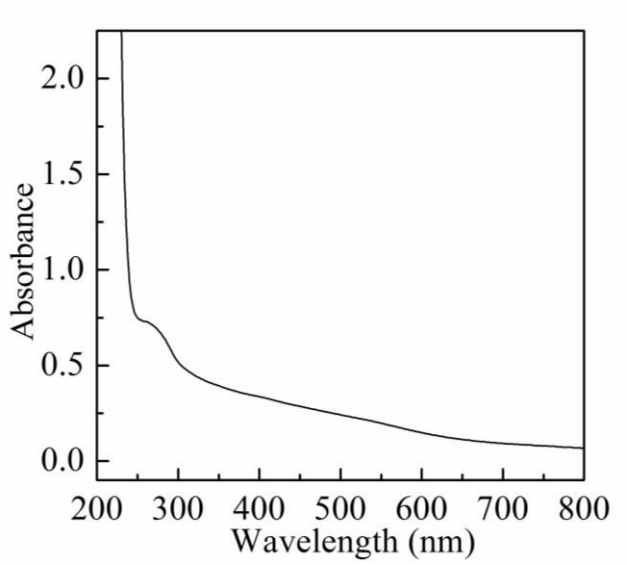

a
O 1s
C 1s
N 1s
Se 3d
intensity (a.u.)
800
600
400
200
0
Binding Energy (eV)
b
O 1s
C 1s
Cd 3d
N 1s
Se 3d
intensity (a.u.)
800
600
400
200
0
Binding Energy (eV)

Fig.S2



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36 **Fig.S3**

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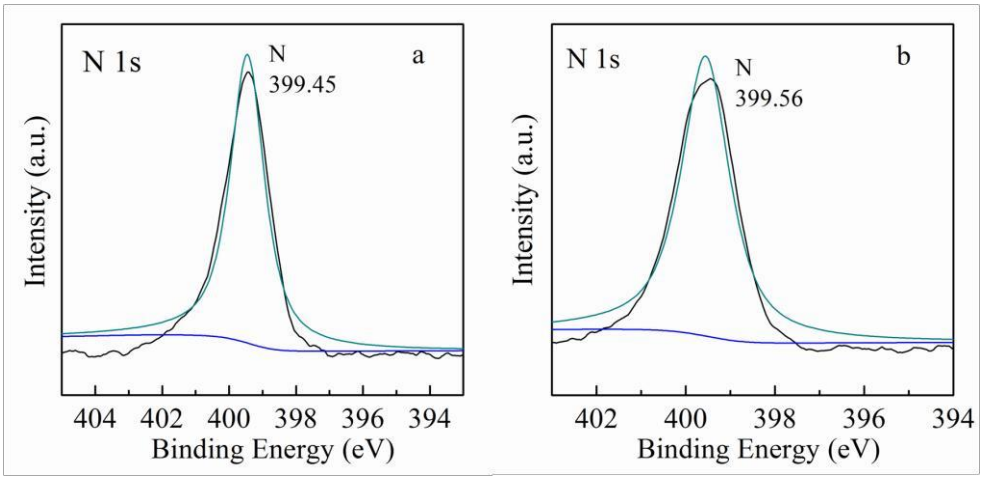
N 1s
N
399.45
a
Intensity (a.u.)
404 402 400 398 396 394
Binding Energy (eV)
N 1s
N
399.56
b
Intensity (a.u.)
402 400 398 396 394
Binding Energy (eV)

Fig.S4

1. T. Wang, L. Yang, B. Zhang and J. Liu, *Colloids and Surfaces B: Biointerfaces*, 2010, 80, 94-102.

2. W. Zhang, Z. Chen, H. Liu, L. Zhang, P. Gao and D. Li, *Colloids and Surfaces B: Biointerfaces*, 2011, 88, 196-201.

3. R. Jain, N. Jordan, D. Schild, E. D. van Hullebusch, S. Weiss, C. Franzen, F. Farges, R. Hübner and P. N. L. Lens, *Chemical Engineering Journal*, 2015, 260, 855-863.