Electronic Supplementary Material (ESI) for RSC Advances.

Supporting information

Mesoporous silica-giant particle with slit pore arrangement as adsorbent for heavy metal oxyanions from aqueous medium

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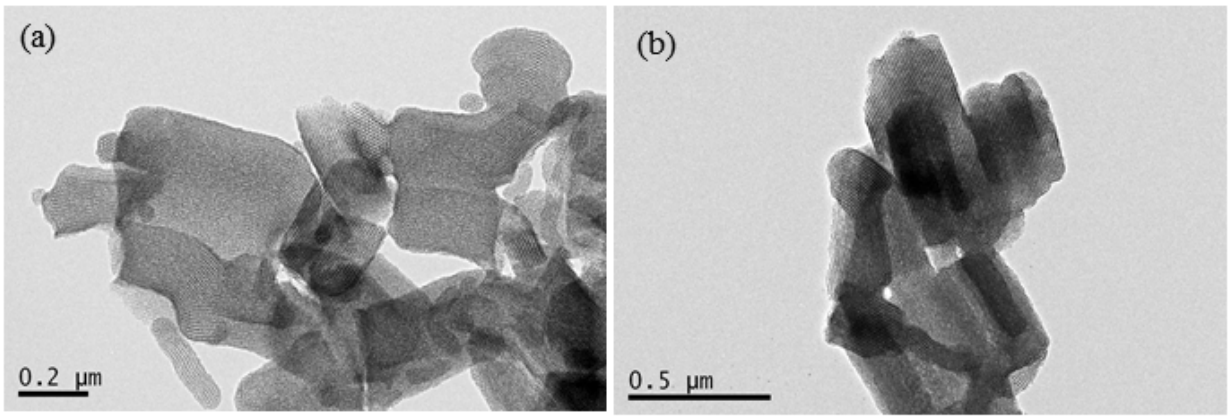

Fig S1 TEM images of N-(2-Aminoethyl)-3-(trimethoxysilyl)propylamine (a) and 2-[2-(3-Trimethoxysilylpropylamino)ethylamino]ethylamine (b) functionalized IBN-4 mesoporous silica.

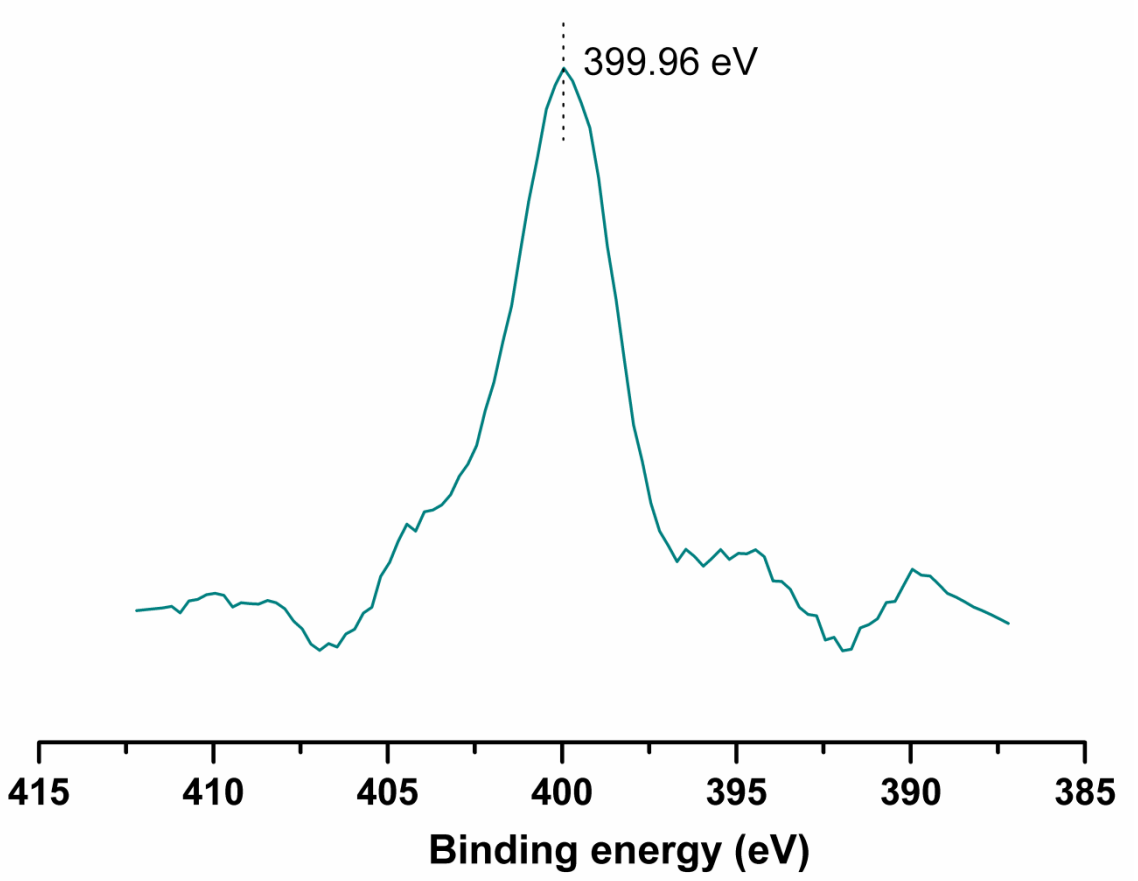

Fig S2 XPS pattern for N1s region of amine group in ICMS-N15.

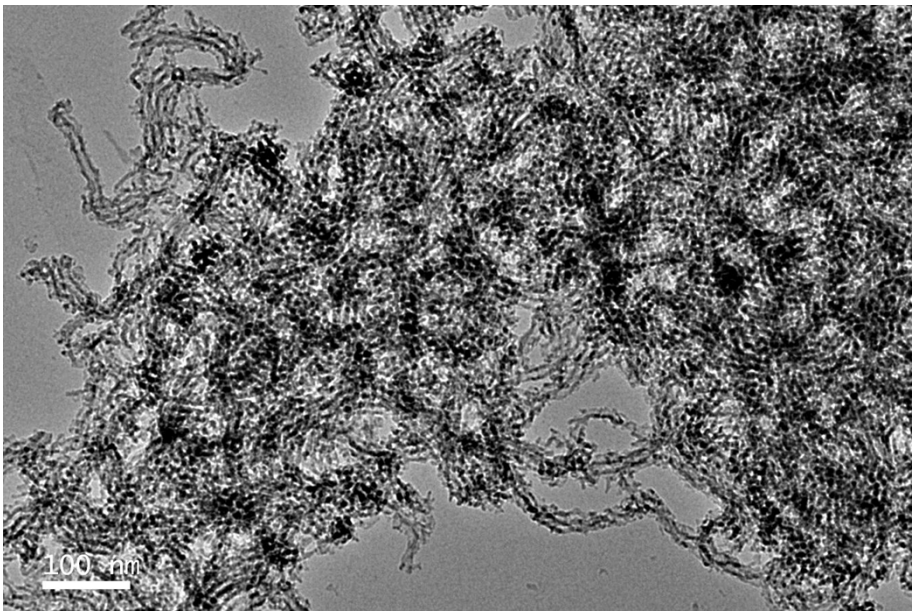

Fig S3 Tem image of ICMS-N20

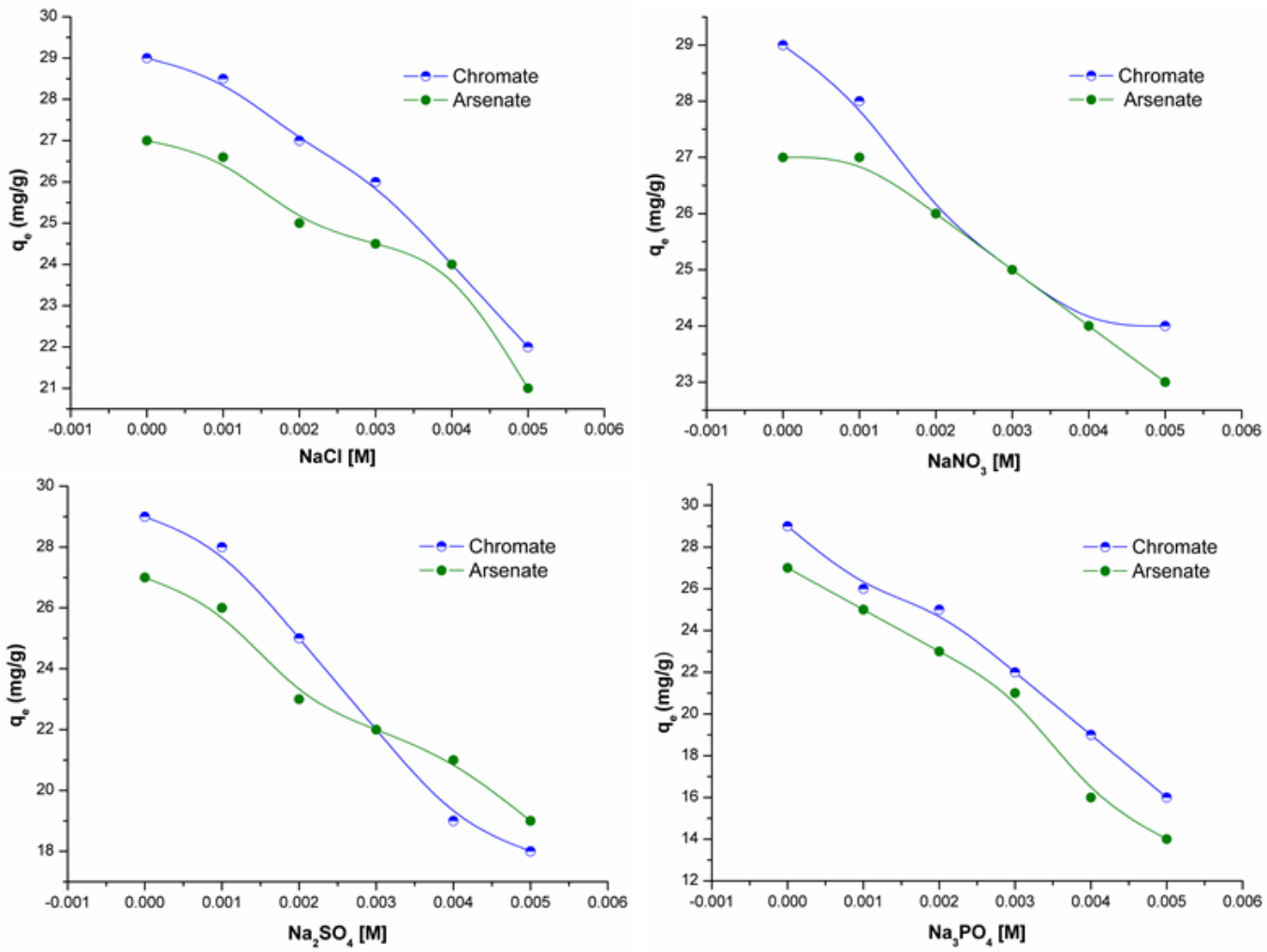

Fig S4 Influence of NEAs on the adsorption of Arsenate and Chromate by ICMS-N15. Adsorption conditions: 50 mg silica, 50 ml of 50 ppm heavy metal solution, 25 °C, X mole of sodium salts of respective anions. [M]- Molarity of solution.

Table S1 Comparison of amino and thiol functionalized hexagonal mesoporous silica materials for the adsorption of arsenate and chromate

Adsorbent	Organo functional group	adsorbate	Adsorption capacity (mmol/g)	Stoichiometric ratio (N : oxy anion)	Ref
MCM-41	Aminopropyl	Arsenate, chromate	0.45 0.45	0.25 0.5	11
Imi-SBA-15	imidazole	chromate	0.97	0.5	32
SBA-15	Polyamines	Arsenate	0.26–0.62	0.15-0.37	47
HMS	Mercaptopropyl	Arsenite	0.38–1.15	0.04	48
MCM-41	Polyamines	Arsenate	0.30–0.52	0.24-0.18	47
ICMS-N15 (IBN-4)	Aminopropyl	Arsenate, Chromate	0.39 0.29	0.26 0.19	This work

Adsorption capacity were calculated based on $HAsO_4^{2-}$ and CrO_4^{2-} ions