

# **Nanocasted Synthesis of Ordered Mesoporous Ce-Fe Binary Oxide with High Surface Area and Its Excellent Capacity for As(V) and Cr(VI) Removal from Aqueous Solution**

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1.

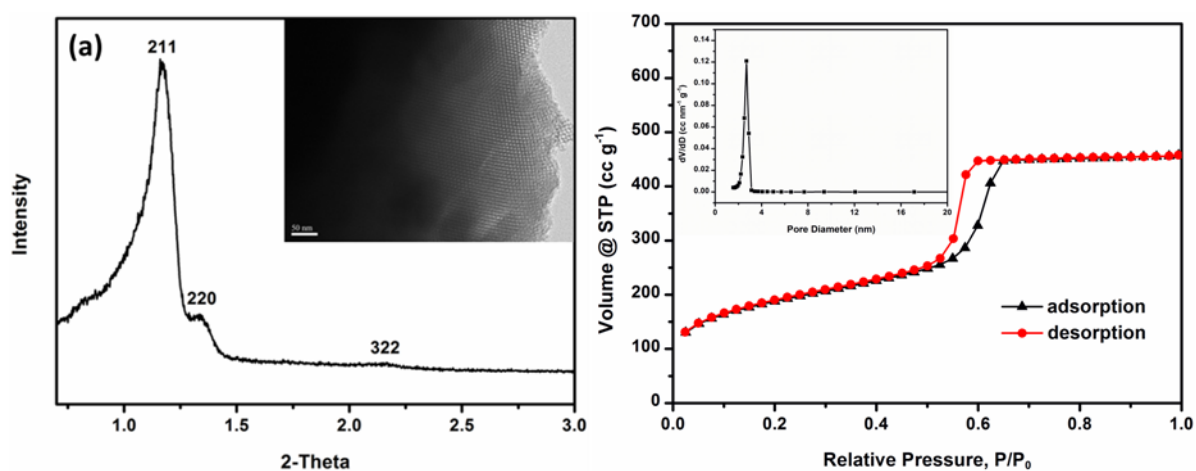


Fig. S1 (a) SXRD pattern, TEM image (inset), and (b) N<sub>2</sub> adsorption/desorption isotherm, pore size distribution (in inset), of the mesoporous cubic (Ia3d) vinylsilica after removal of the surfactant.

2.

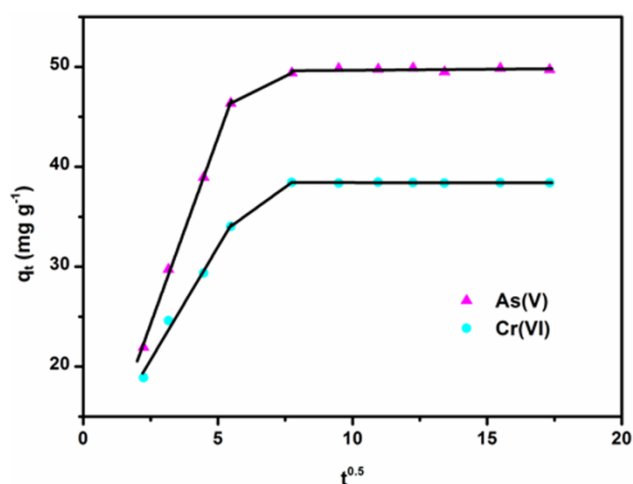


Fig. S2 Intra-particle diffusion model for As(V) or Cr(VI) adsorption onto OMCF. The initial As(V) or Cr(VI) concentration was 10 mg·L<sup>-1</sup>; the dosage of adsorbents was 0.2 g·L<sup>-1</sup>; the initial solution pH was 4 for As(V) and Cr(VI).

3.

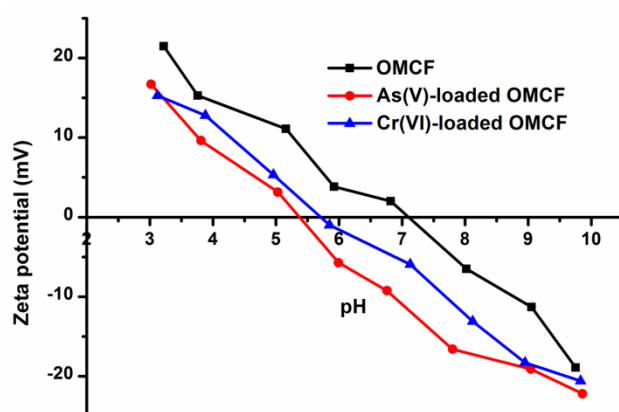


Fig. S3 Zeta potential of OMCF, As(V)-loaded OMCF and Cr(VI)-loaded OMCF.

4.

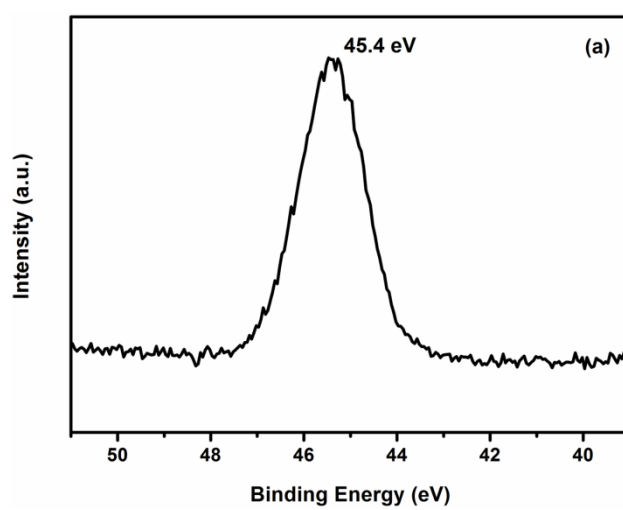


Fig. S4 As 3d core levels of OMCI after the adsorption of As(V).

5.

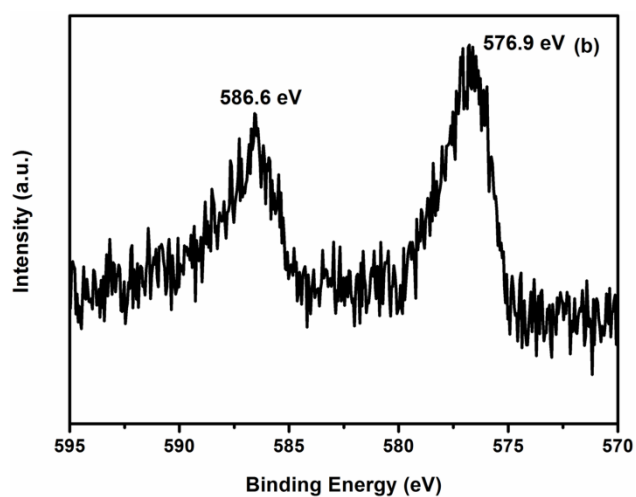


Fig. S5 Cr 2p core levels of OMCI after the adsorption of Cr(VI).

6.

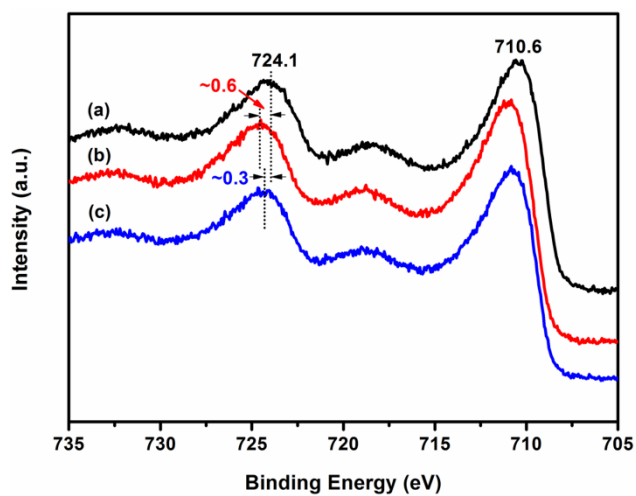


Fig. S6 Fe 2p spectra of OMCI (a), As(V)-loaded OMCI(b) and Cr(VI)-loaded OMCI(c).

7.

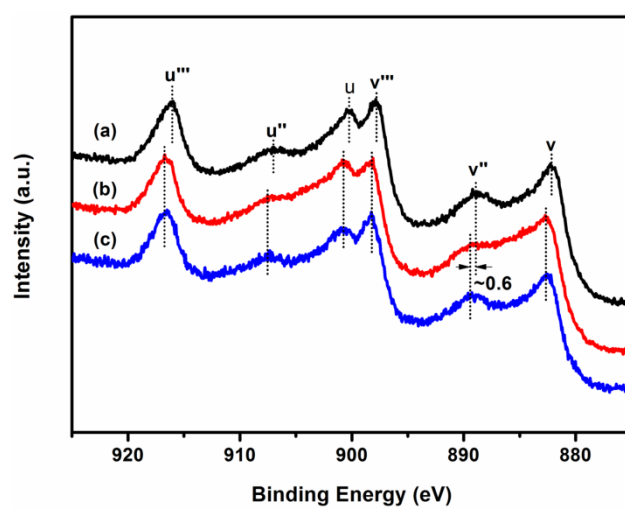


Fig. S7 Ce 3d spectra of OMCI (a), As(V)-loaded OMCI(b) and Cr(VI)-loaded OMCI(c).

Table S1 Intraparticle diffusion model parameters for the adsorption of As(V) or Cr(VI) on OMCI.

| Absorbate | $\frac{k_{i,1}}{\text{mg} \cdot \text{g}^{-1} \cdot \text{min}^{-0.5}}$ | $C_1$ | $R^2$  | $\frac{k_{i,2}}{\text{mg} \cdot \text{g}^{-1} \cdot \text{min}^{-0.5}}$ | $C_2$ | $R^2$ | $\frac{k_{i,3}}{\text{mg} \cdot \text{g}^{-1} \cdot \text{min}^{-0.5}}$ | $C_3$ | $R^2$  |
|-----------|-------------------------------------------------------------------------|-------|--------|-------------------------------------------------------------------------|-------|-------|-------------------------------------------------------------------------|-------|--------|
| As(V)     | 7.461                                                                   | 5.616 | 0.9988 | 1.336                                                                   | 39.04 | 1     | 0.0201                                                                  | 49.46 | 0.6211 |
| Cr(VI)    | 4.522                                                                   | 9.372 | 0.9899 | 1.942                                                                   | 23.40 | 1     | 0.0027                                                                  | 38.44 | 0.7358 |