

Electronic Supplementary Information (ESI)

Controllable Construction of Micro/nanostructured NiO in Confined Microchannels via Microfluidic Chemical Fabrication for Highly Efficient and Specific Absorption of Abundant Proteins

De Zhao,^{‡a} Gang Wang,^{‡a} Zhongyuan He,^a Hongzhi Wang,^{*a} Qinghong Zhang^a and Yaogang Li^{*b}

^a State Key Laboratory for Modification of Chemical Fibers and Polymer Materials, College of Materials Science and Engineering, Donghua University, 201620 (People's Republic of China). Email: wanghz@dhu.edu.cn; Fax: +86-021-67792855; Tel: +86-021-67792881

^b Engineering Research Center of Advanced Glasses Manufacturing Technology, MOE, Donghua University, 201620 (People's Republic of China). E-mail: yaogang_li@dhu.edu.cn; Fax: +86-021-67792855; Tel: +86-021-67792526

[‡]These authors contributed equally to this work.

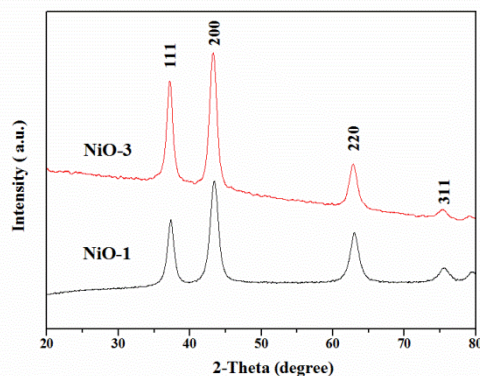


Fig. S1 XRD patterns of the as-prepared NiO scraped off the inner surface of capillary microchannels after calcined at 500 °C for 2 h.

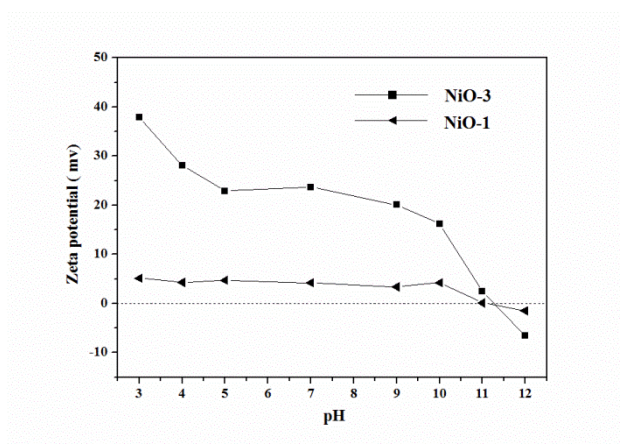


Fig. S2 Zeta-potential plots of the as-prepared NiO after calcined at 500 °C for 2 h. as a function of the pH of buffer solution.

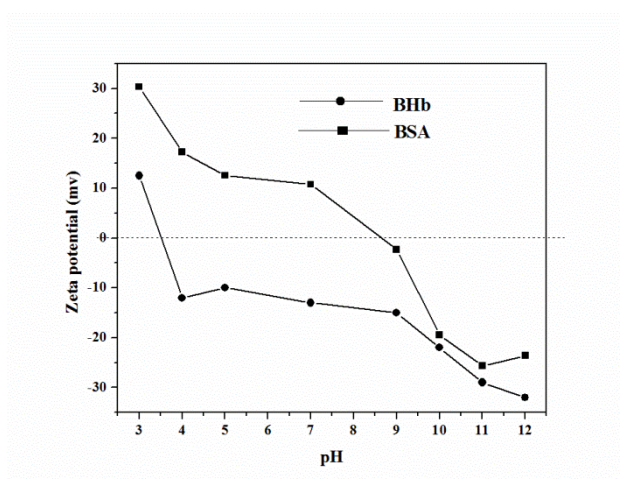


Fig. S3 Zeta-potential plots of BSA and BHB as a function of the pH of the buffer solution.

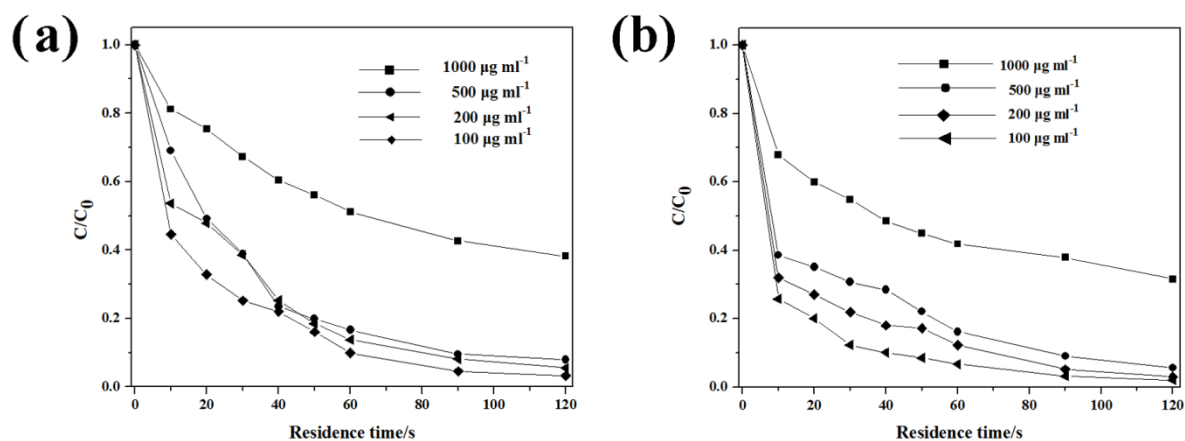


Fig. S4 Adsorption capture of proteins with different concentrations by NiO-3-modified capillary microchannels versus different RTs; (a) BSA; (b) BHB.

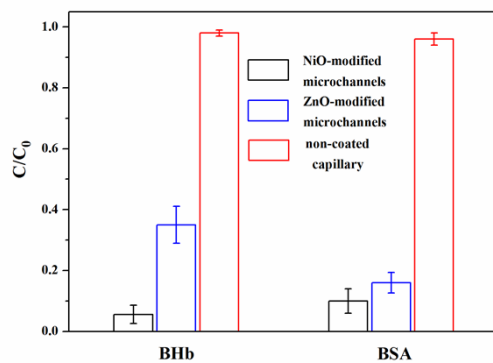


Fig. S5 Absorption capture of proteins ($500 \mu\text{g mL}^{-1}$) with NiO-3-modified microchannels, ZnO-modified microchannels and non-coated capillary.

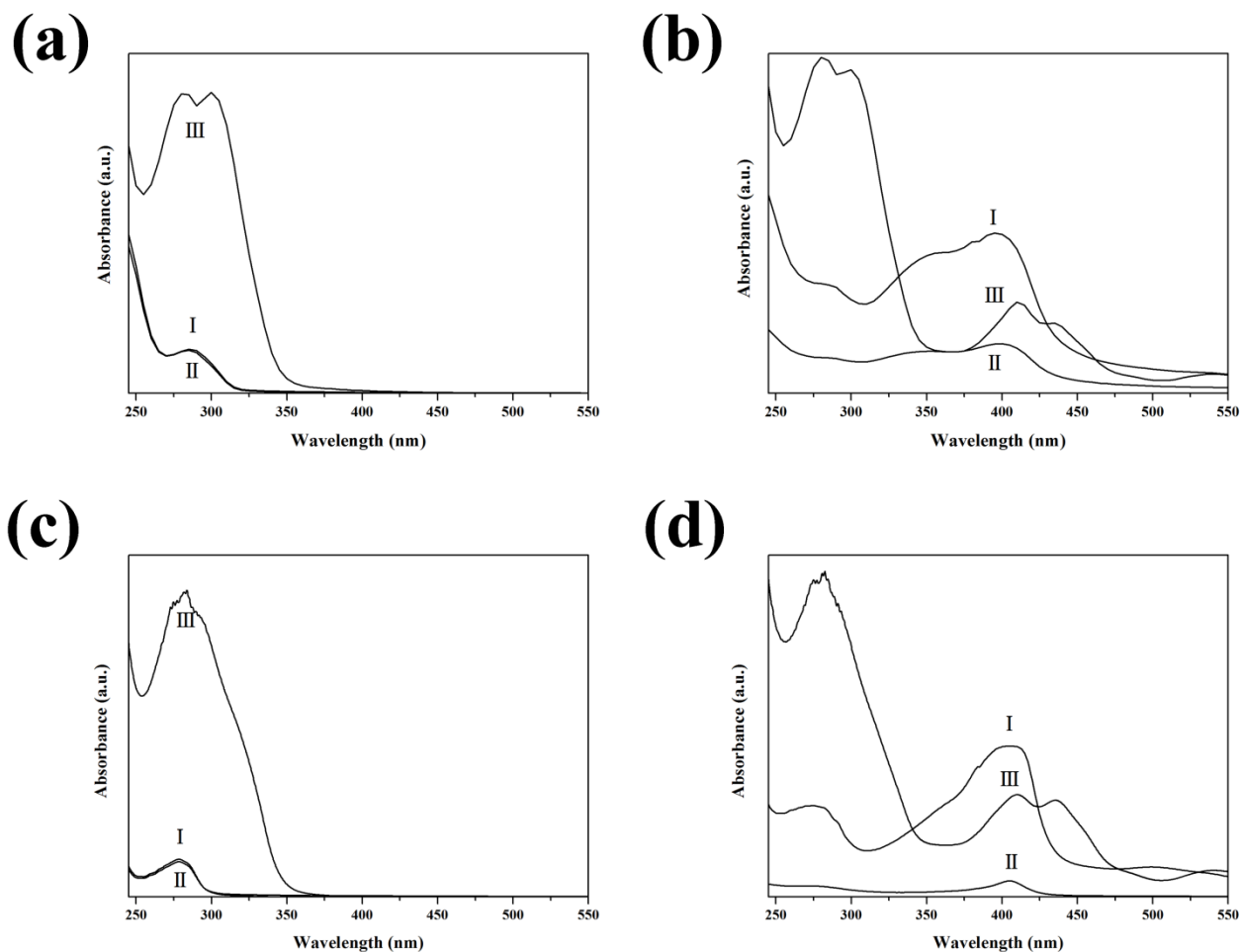


Fig. S6 UV-Vis spectra of the samples obtained in absorption-desorption process of single protein solution ($500 \mu\text{g mL}^{-1}$) under two different conditions. (a) BSA, 1 mM KCl, pH=12; (b) Bhb, 1 mM KCl,

pH=12; (c) BSA, 200 mM KCl, pH=7; (d) BHb, 200 mM KCl, pH=7. Curve “I” “II” “III” in the each map is the UV-Vis spectra of the samples before absorption, after absorption and after elution with 0.1 g mL⁻¹ imidazole solution respectively.