

Millimeter Bi₂S₃@polyacrylonitrile hybrid beads for high efficient iodine capture

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Determination of I₂ Concentration in cyclohexane

I₂ sample with different concentrations (10, 50, 100, 150, 200, 250 and 300 mg/L, respectively). I₂ concentrations were measured by ultraviolet spectrometer at 523 nm. The standard linear calibration curves were prepared to match closely the composition of the analyzed solutions and the linearity was ensured by Beer-Lambert law.

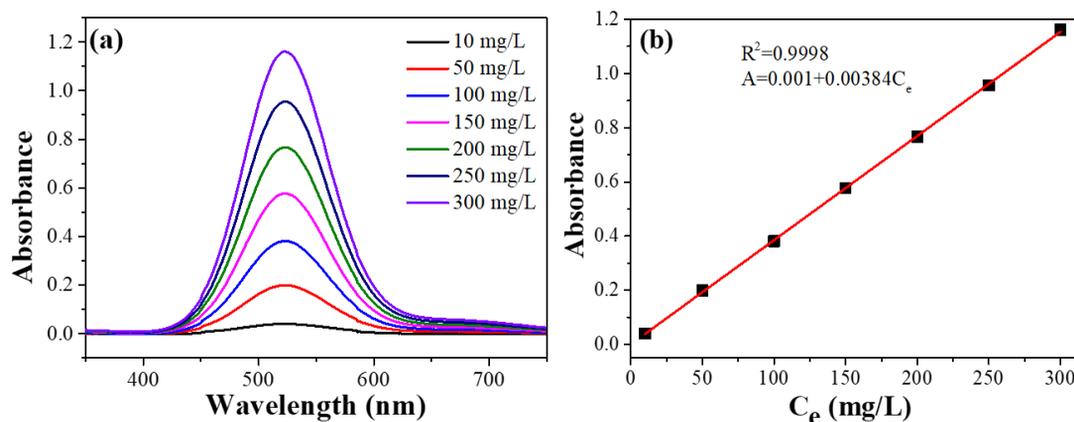


Fig. S1. (a) The absorbance of standard I₂ solutions with different concentrations. (b) The linear relationship between absorbance (A) and I₂ concentrations.

The relationship between absorbance (A) at 523 nm and I₂ standard concentration was drawn in Fig. S1(a). The calibration curve for A value against I₂ concentration was linear in the range from 10 to 300 mg/L and fitted the linear equation $A = 0.001 + 0.00384 C_e$ (where C_e is the concentration of I₂, mg/L; $R^2=0.999$) (Fig. S1b). Therefore, the residual I₂ concentration was calculated according to the standard curve in the further experiments.

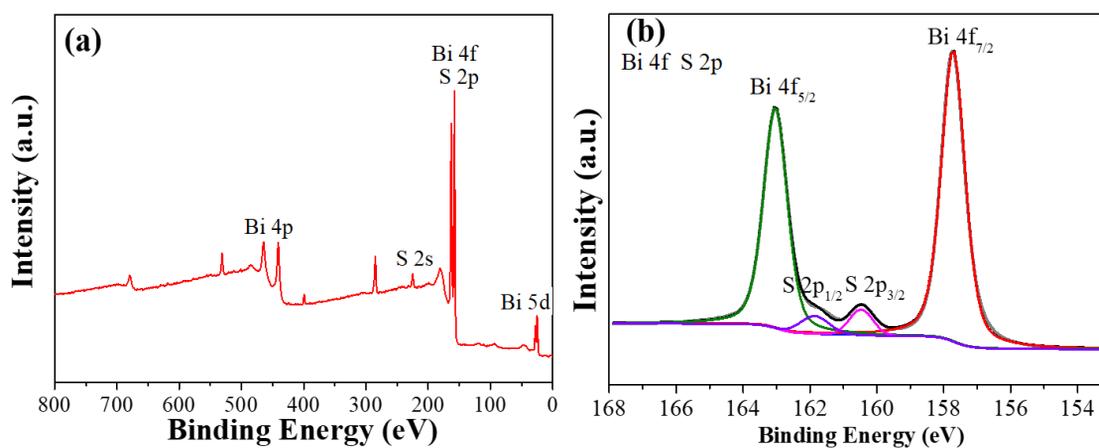


Fig. S2. (a) Full survey XPS spectra, (b) Bi 4f and S 2p of Bi₂S₃.

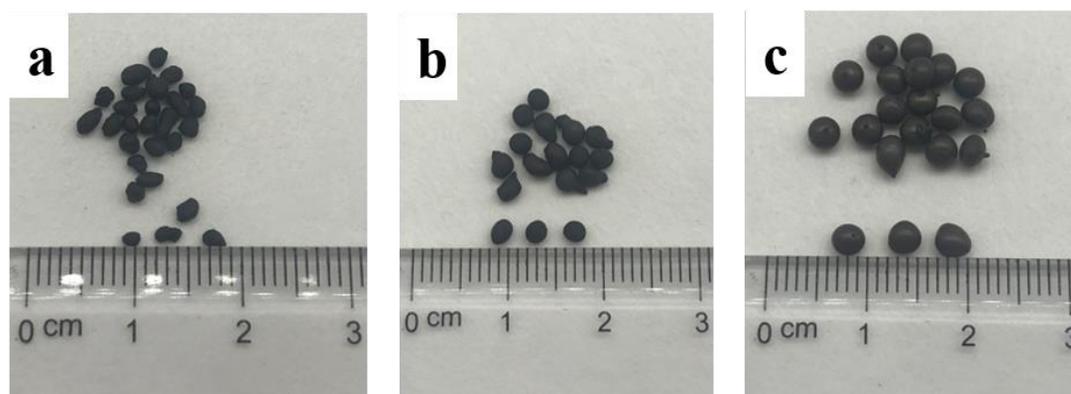


Fig. S3. Digital photographs of (a) Bi₂S₃@PAN-30%, (b) Bi₂S₃@PAN-50%, (c) Bi₂S₃@PAN-70%.

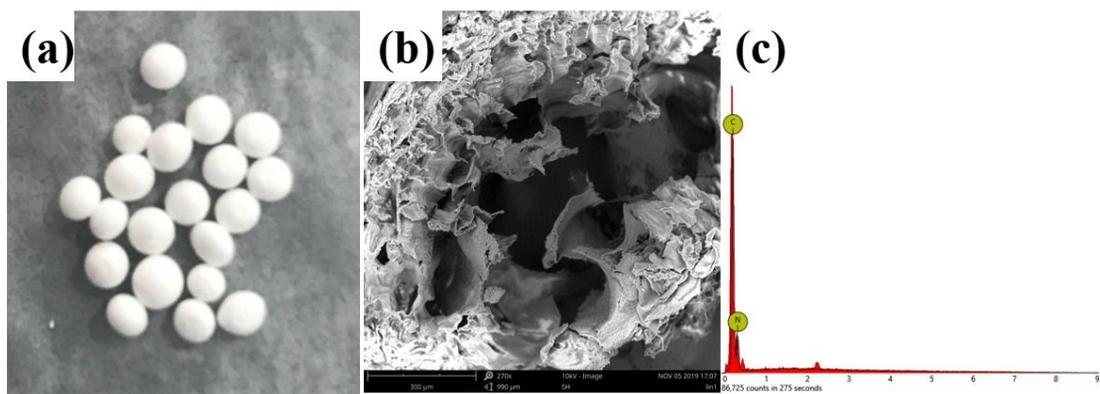


Fig. S4. (a) Digital photograph, (b) SEM image, (c) EDS of pure PAN beads.

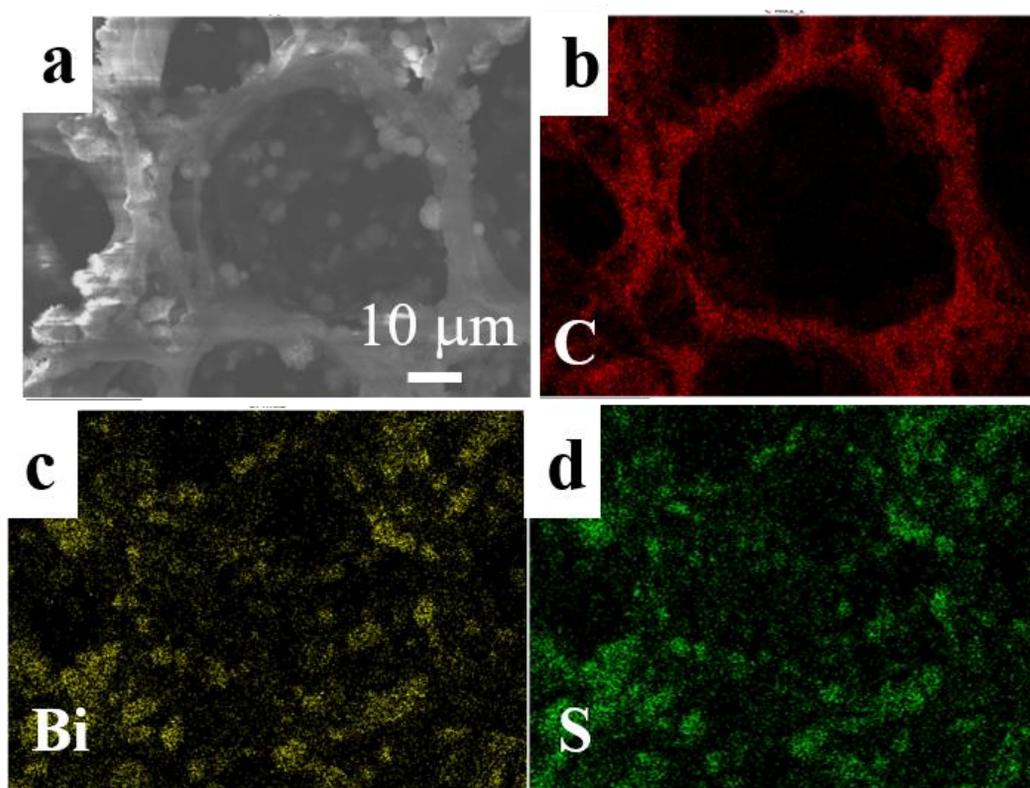


Fig. S5. EDS elemental distribution mapping images of $\text{Bi}_2\text{S}_3@$ PAN.

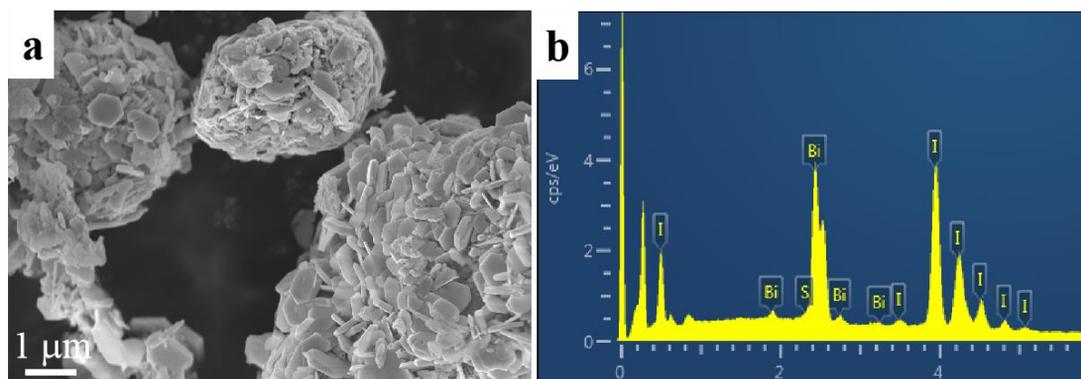


Fig. S6. (a) SEM image, (b) EDS of $\text{Bi}_2\text{S}_3\text{-I}_2$.