

Achieving Large-capability Adsorption of Hg⁰ in Wet Scrubbing by Defect-rich Colloidal Copper Sulfides under High-SO₂ Atmosphere

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FIGURES:

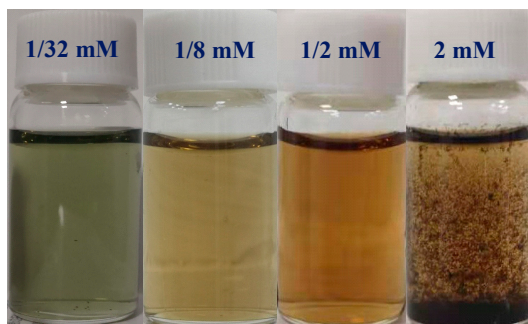


Figure S1. Pictures of c-CuS prepared at different concentration.

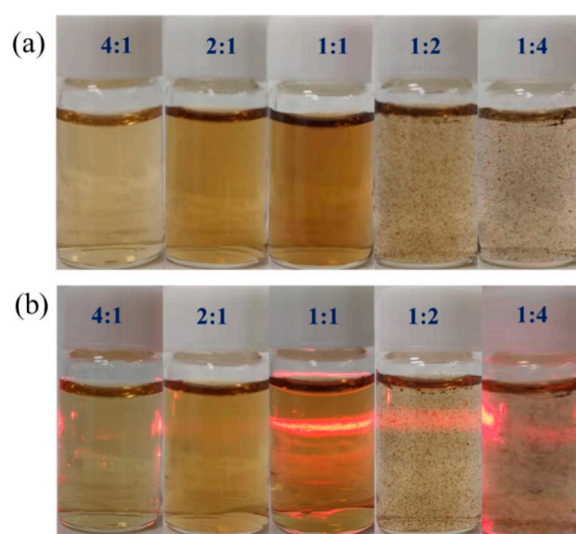


Figure S2. (a) The pictures of c-CuS prepared with different Cu: S ratio. (b) Their phenomenon of Tyndall Effect.

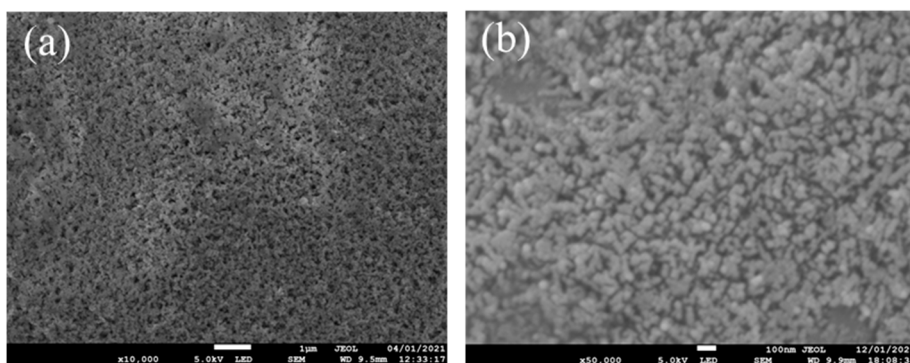


Figure S3. The SEM images of c-CuS (Prepared condition of c-CuS was the concentration of $1/2 \text{ mmol}\cdot\text{L}^{-1}$ and the Cu:S raw material ratio of 1:1 by using a single-jet liquid-phase sulfidation method)

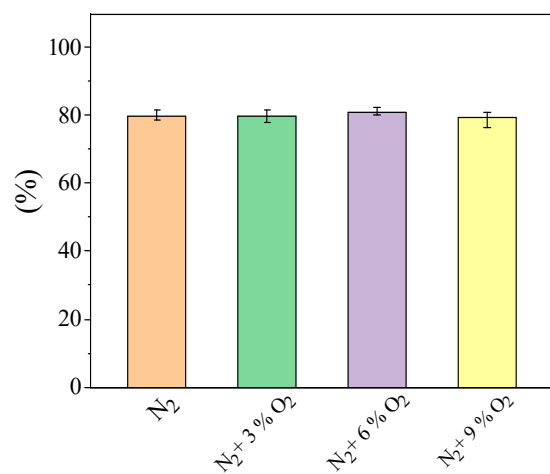


Figure S4. The effect of O_2 .

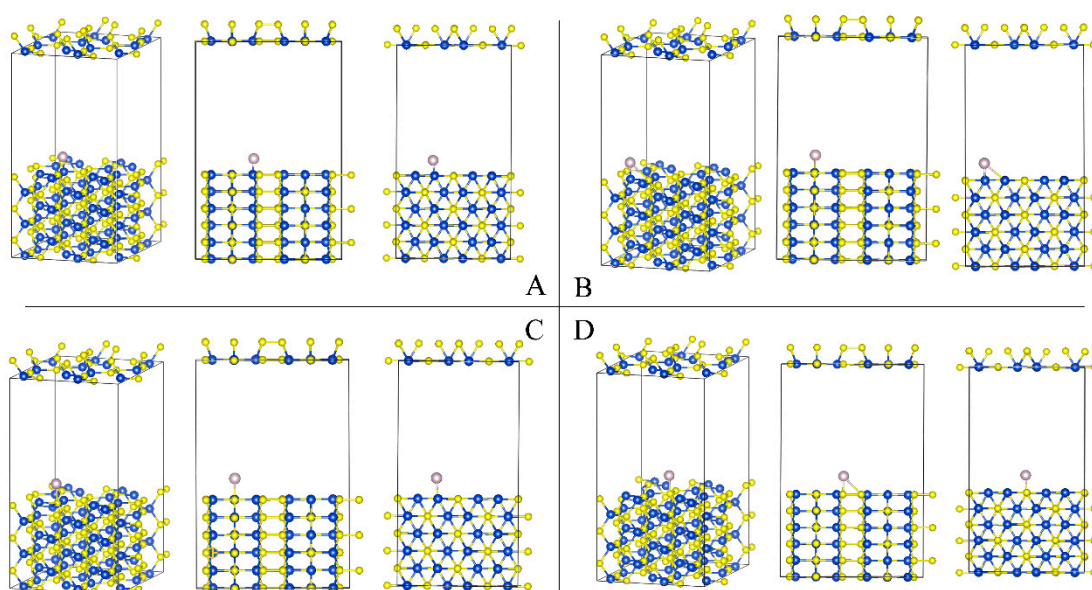


Figure S5. The structure of configurations A, B, C, and D after mercury adsorption.

TABLES:

Table S1. List of experimental conditions for Hg⁰ capture.

<i>Fig. number</i>	<i>Solution volume</i>	<i>Solution pH</i>	<i>Solution temperature</i>	<i>Flue gas</i>
1a~1d	80 mL	3.0	20 °C	N ₂
3a,3b	80 mL	3.0	20 °C	6% vol SO ₂ +N ₂
4a	80 mL	3.0	20 °C	N ₂
4c	10 mL	3.0	20 °C	SFG+890µg·m ⁻³ Hg ⁰

SFG: 6% vol O₂+6% vol SO₂+88% vol N₂.

Table S2. Hg⁰ adsorption capacities and rates different sulfide sorbents.

<i>Sorbents</i>	<i>Hg⁰ adsorption capacities (mg·g⁻¹)</i>	<i>Average Hg⁰ adsorption rates (µg·g⁻¹·min⁻¹)</i>	<i>SO₂/O₂ vol percentage</i>	<i>Reference</i>
CA-CuS	736.49	306.88	6/6	This work
CuS@PUF	265.60	442.60	0/0	[1]
CuS	122.40	13.56	0/5	[2]
Fe ₃ O ₄ @CuS	88.70	13.25	0/0	[3]
ZnO@CuS	60.53	16.81	0/0	[4]
Nano-CuS	50.17	71.60	0/0	[5]
Co ₃ S ₄	43.03	84.10	0/0	[6]
FeS _{1.32} Se _{0.11}	20.22	3.7	2.5/6	[7]
Cu _x S _y @AC	3.92	2.18	1.5/5	[8]
S/FeS ₂	2.73	0.91	0/0	[9]
Nano-ZnS	0.49	0.26	0/0	[10]
Fe-ZnS	0.26	1.42	0/0	[11]

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