

# Metal Mobility and Toxicity of Reclaimed copper smelting fly ash and smelting slag

---

## Supporting Information

Jiancheng Shu<sup>a\*</sup>, Tianya Lei<sup>a</sup>, Yaling Deng<sup>a</sup>, Mengjun Chen<sup>a</sup>, Xiangfei Zeng<sup>a</sup>,  
Renlong Liu<sup>b</sup>

a. Key Laboratory of Solid Waste Treatment and Resource Recycle (SWUST), Ministry of Education, Southwest University of Science and Technology, 59 Qinglong Road, Mianyang, 621010, China

b. School of Chemistry and Chemical Engineering, Chongqing University, Chongqing, 400044, China

Corresponding author. E-mail address: shujc@swust.edu.cn

Phone: +86-0816-2419569 (Jiancheng Shu)

# Contents

---

**One figures, one table and other content are included in this supporting information**

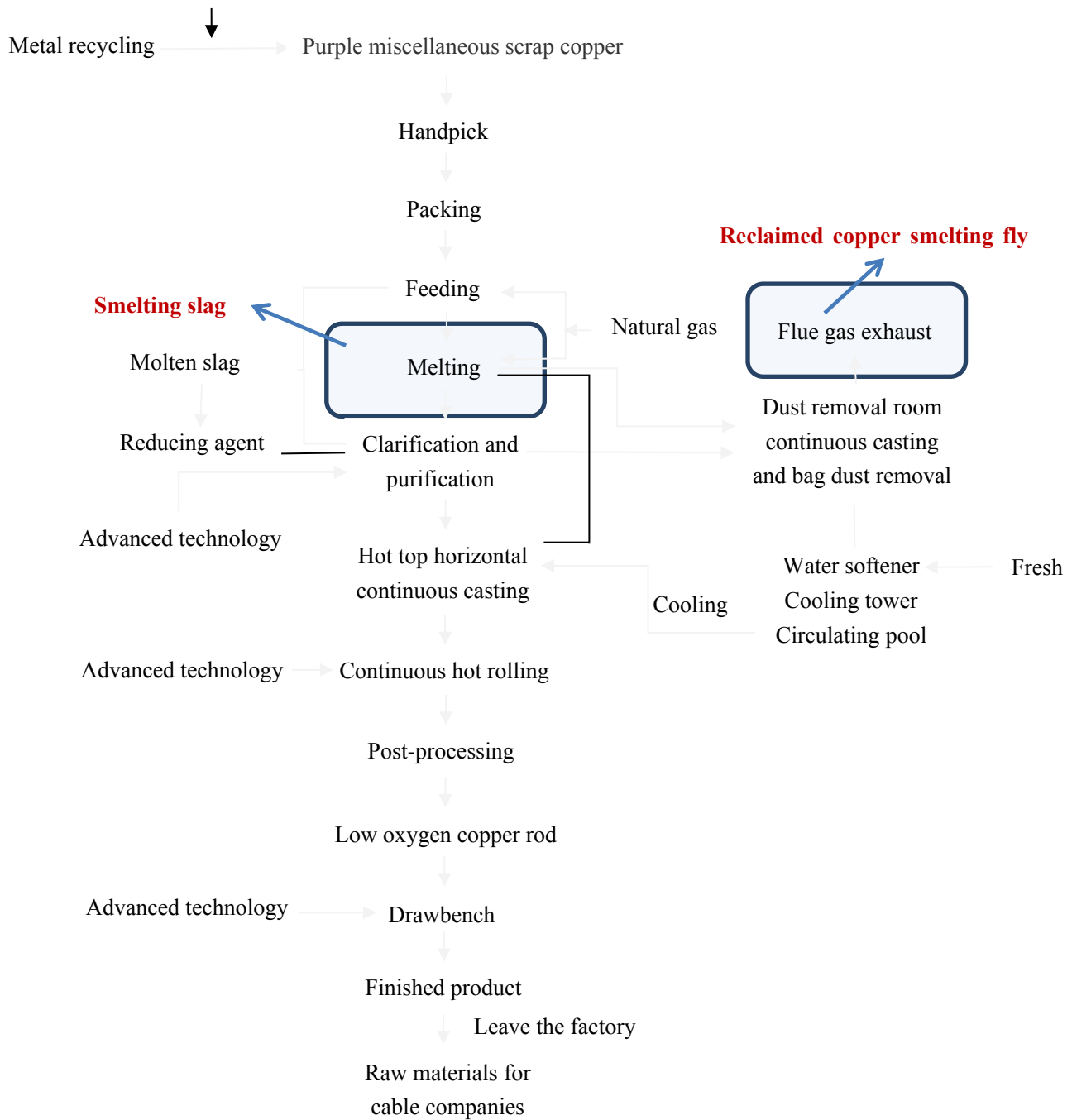
**Fig. S1.** Flow chart of regenerated copper smelting process

**Table A.** Sequential extraction procedure for heavy metals in RCS fly ash and smelting slag by BCR

**Table B.** Fractions of metals contained in RCS fly ash and smelting slag by BCR (%)

**Fig. S1**

Copper smelting fly ash



**Table A.** Sequential extraction procedure for heavy metals in RCS fly ash and smelting slag by BCR

Chemical speciation	Conditions
Exchangeable and Soluble	0.11 mol/L HAcO, 16 h 22±5 °C
Reducible	0.1 mol/L NH <sub>2</sub> OH·HCl, 16 h 22±5 °C
Oxidizable	8.8 mol/L H <sub>2</sub> O <sub>2</sub> (pH=2.0, HNO <sub>3</sub> , 22±5 °C 1 h and continue for 1 h at 85±2 °C), 8.8 mol/L H <sub>2</sub> O <sub>2</sub> (pH=2.0, HNO <sub>3</sub> , 85±2 °C 1 h), NH <sub>4</sub> AcO 1.0 mol/L (pH=2.0, HNO <sub>3</sub> , 22±5 °C 16 h)
Residual	digested by HF-HClO <sub>4</sub> -HNO <sub>3</sub>

**Table B.** Fractions of metals contained in RCS fly ash and smelting slag by BCR (%)

□	RCS fly ash				smelting slag			
	Exchangeable and Soluble	Reducible	Oxidizable	Residual	Exchangeable and Soluble	Reducible	Oxidizable	Residual
Al	21.085	3.581	35.010	40.325	3.410	2.282	8.388	85.920
Ba	0.573	0.573	7.880	90.974	1.261	1.835	6.651	90.252
Be	0.000	0.000	43.636	56.364	0.000	0.000	0.000	100.000
Cd	35.889	24.959	39.152	0.000	2.857	4.286	92.857	0.000
Cu	8.103	13.376	6.745	71.776	0.128	0.170	0.000	99.702
Fe	0.110	0.961	2.530	96.398	2.406	12.246	4.067	81.281
Ni	57.895	42.105	0.000	0.000	0.252	1.908	33.066	64.774
Pb	8.633	6.157	9.697	75.513	0.234	0.599	0.000	9.167
Sb	98.328	1.672	0.000	0.000	1.269	11.475	55.685	31.571
Sn	0.000	0.000	0.000	100.000	2.082	3.517	0.000	94.401
Tl	72.550	1.383	13.193	12.874	11.214	0.000	0.000	88.786
Zn	31.217	23.708	12.479	32.596	3.786	8.725	8.857	78.633
Se	23.000	34.000	38.000	5.000	32.000	29.000	24.000	15.000
Au	11.203	88.797	0.000	0.000	0.000	0.391	9.766	89.844