

## Supplementary Materials

# An Integrated Capture of Red Mud and One-Step Heat-Treatment Process to Recover Platinum Group Metals and Prepare Glass-Ceramics from Spent Auto-Catalysts

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**Table S1** Relationship between partial molar volume of different oxides and temperature.

Oxides	Partial molar volume (cm <sup>3</sup> /mol)	References
SiO <sub>2</sub>	$27.516 \times (1 + \frac{T-1773}{10000})$	[1,2]
CaO	$20.7 \times (1 + \frac{T-1773}{10000})$	[1,2]
Al <sub>2</sub> O <sub>3</sub>	$28.3 \times (1 + \frac{T-1773}{10000})$	[1,2]
MgO	$16.1 \times (1 + \frac{T-1773}{10000})$	[2]
B <sub>2</sub> O <sub>3</sub>	$45.8 \times (1 + \frac{T-1773}{10000})$	[3]
TiO <sub>2</sub>	$19.65 \times (1 + \frac{T-1773}{10000})$	[4]
FeO	$15.8 \times (1 + \frac{T-1773}{10000})$	[5]

**Table S2** The viscosity of slag obtained from CE under different temperature.

Temperature (°C)	Slag viscosity (Pa•s)
1300	3.259
1350	1.552
1400	0.823
1450	0.479
1500	0.3
1550	0.2
1600	0.14

## References

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