# Electronic Supplementary Information (ESI)

# A novel conversion process for waste slag: synthesis of calciumsilicate hydrate from blast furnace slag and its application as a versatile adsorbent for water purification

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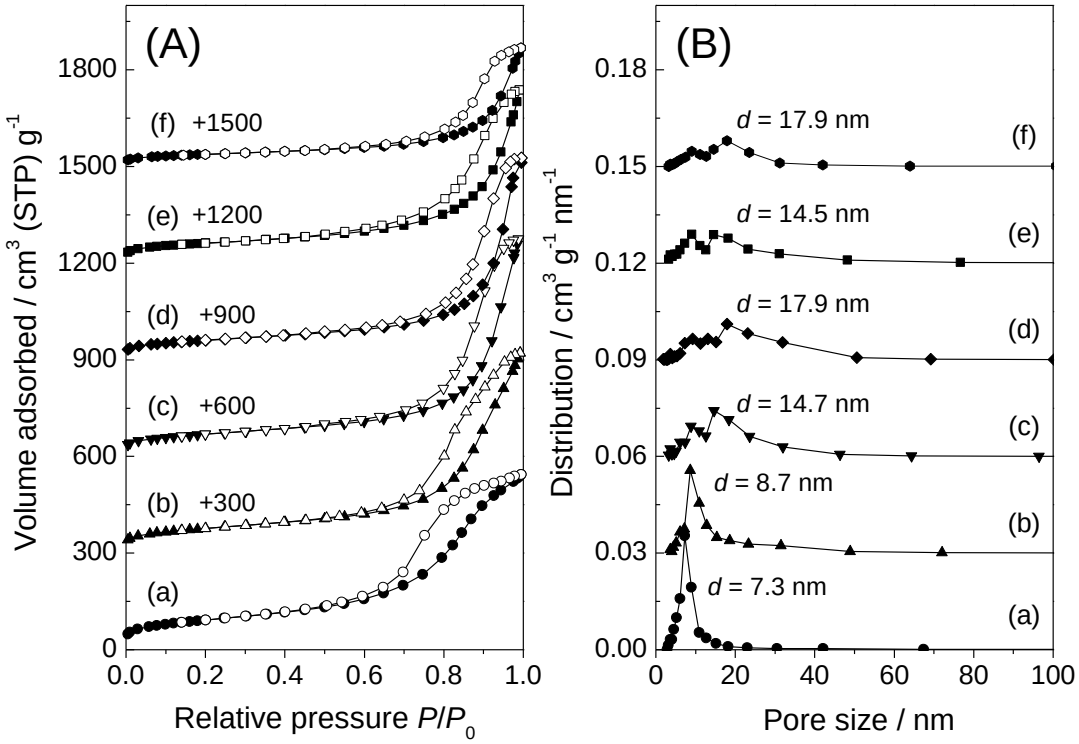


**Fig. S1** (A) Nitrogen adsorption–desorption isotherms and (B) the corresponding pore size distribution curves of slagCS materials synthesized at 100 °C at different pHs: (a) 7.0, (b) 8.0, (c) 9.0, (d) 10.0, (e) 11.0 and (f) 12.0. Filled and empty symbols in the left represent adsorption and desorption branches, respectively. The pore size distributions were obtained from the adsorption branch of the nitrogen isotherms by the BJH (Barret–Joyner–Halenda) method.

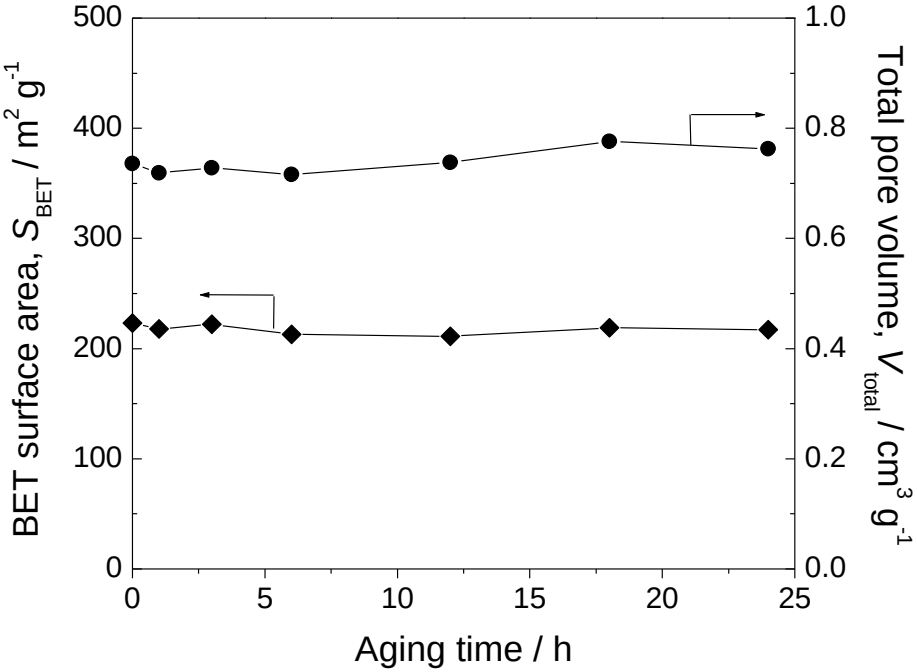


**Fig. S2** Comparisons of BET surface areas and total pore volumes of slagCS materials synthesized at different periods of aging. The samples were degassed under vacuum at 400 °C for 4 h prior to the measurements. The specific surface area was calculated by the BET (Brunauer–Emmett–Teller) method using adsorption data ranging from $P/P_0$ = 0.05 to 0.25. The total pore volume was reported at $P/P_0$ = 0.99.

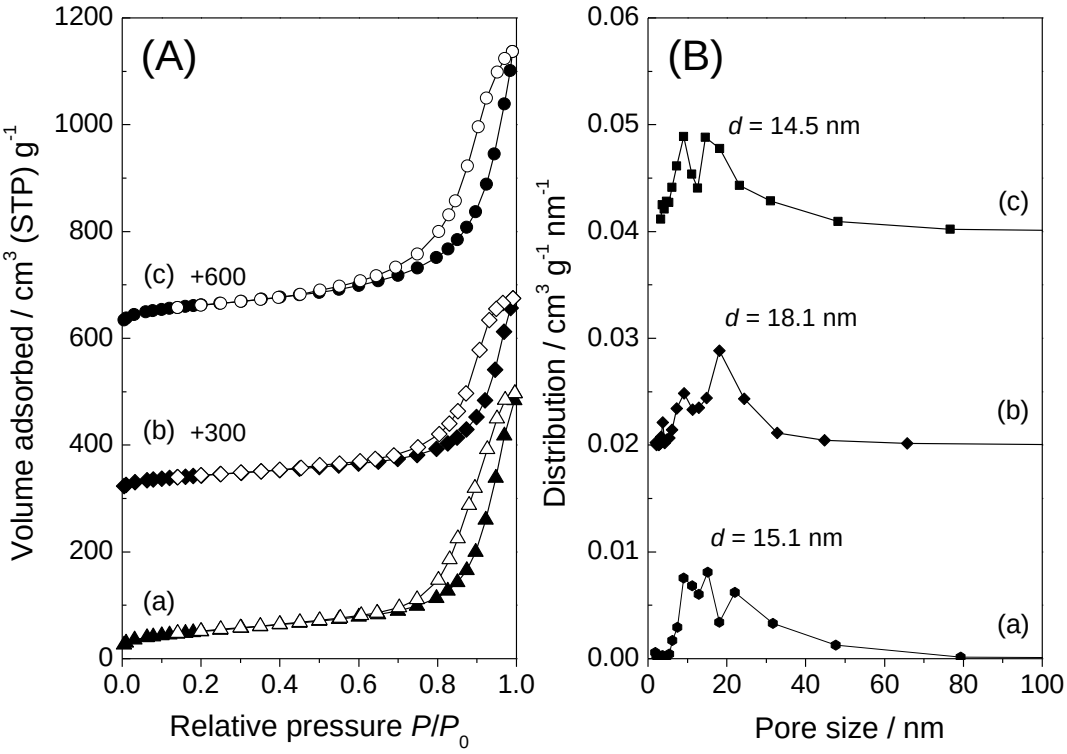


**Fig. S3** (A) Nitrogen adsorption–desorption isotherms and (B) the corresponding pore size distribution curves of slagCS materials synthesized at pH 11.0 and at (a) 30 °C, (b) 70 °C and (c) 100 °C. Filled and empty symbols in the left represent adsorption and desorption branches, respectively. The pore size distributions were obtained from the adsorption branch of the nitrogen isotherms by the BJH (Barret–Joyner–Halenda) method.

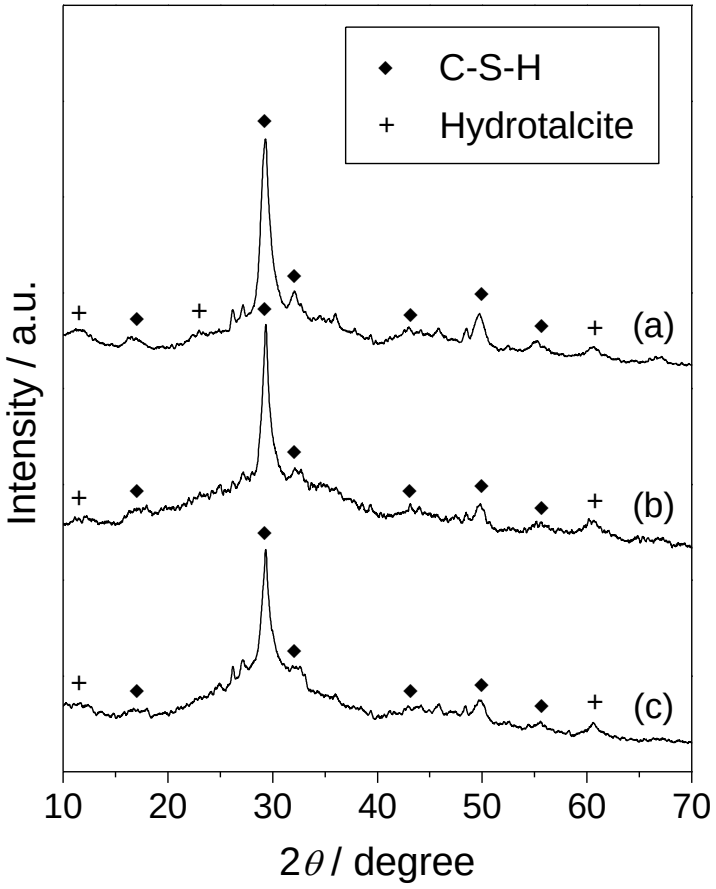


**Fig. S4** X-ray diffraction patterns of (a) parent slagCS (at pH 11.0 and at 100 °C), (b) slagCS after $Cu^{2+}$ adsorption and (c) slagCS after phosphate adsorption.