

Figure S1. XRD patterns of raw coal fly ash and fusion product. Symbols: ◇, Mullite (3Al2O3·2SiO2); □, Quartz (SiO2); ＊, Calcium oxide (CaO); 〇, Sodium silicate (Na2SiO3) or Sodium aluminum silicate (NaAlSi2O6).



Figure S2. Nitrogen adsorption–desorption isotherms of geopolymer samples. Filled and empty symbols represent adsorption and desorption branches, respectively.



Figure S3. UV Vis DRS spectra of Co-geopolymer and original geopolymer.