Electronic Supplementary Information

Preparation of Mg, Ca, or Sr-included mesoporous silica from glass bottle waste for recovery of rare earth metal elements

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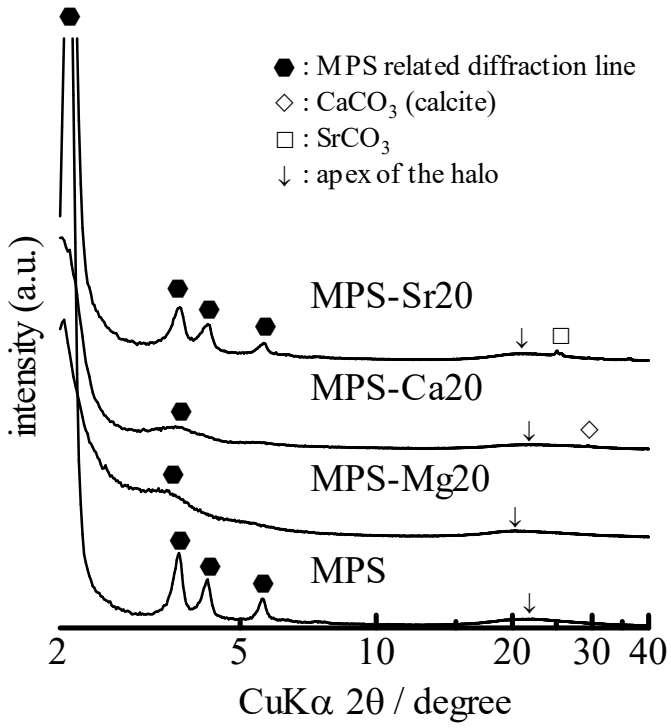

Figure S1 XRD patterns of MPS, MPS-Mg20, MPS-Ca20, and MPS-Sr20 hybrid prepared at pH of 10.5 on logarithmic 2θ.

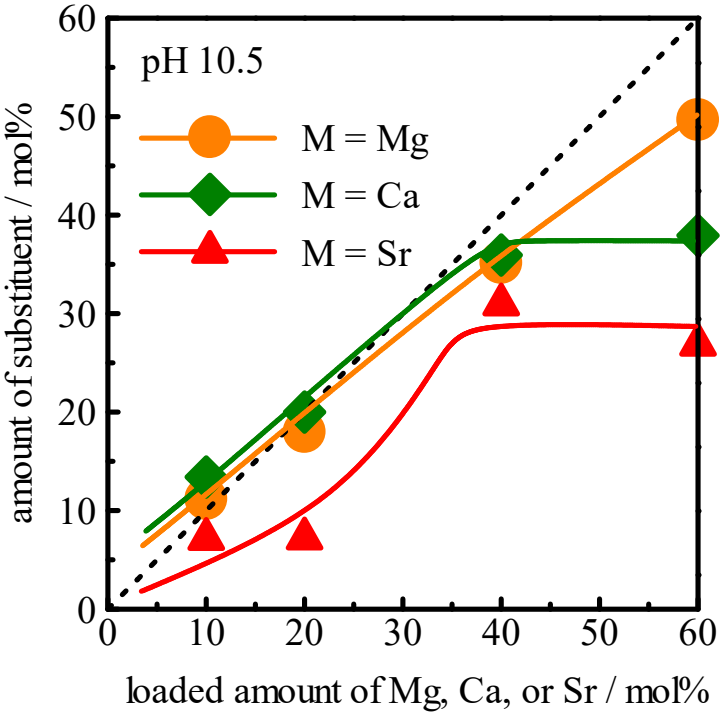

Figure S2 Relationships between loaded amount and actual amount of substituent, Mg, Ca, or Sr

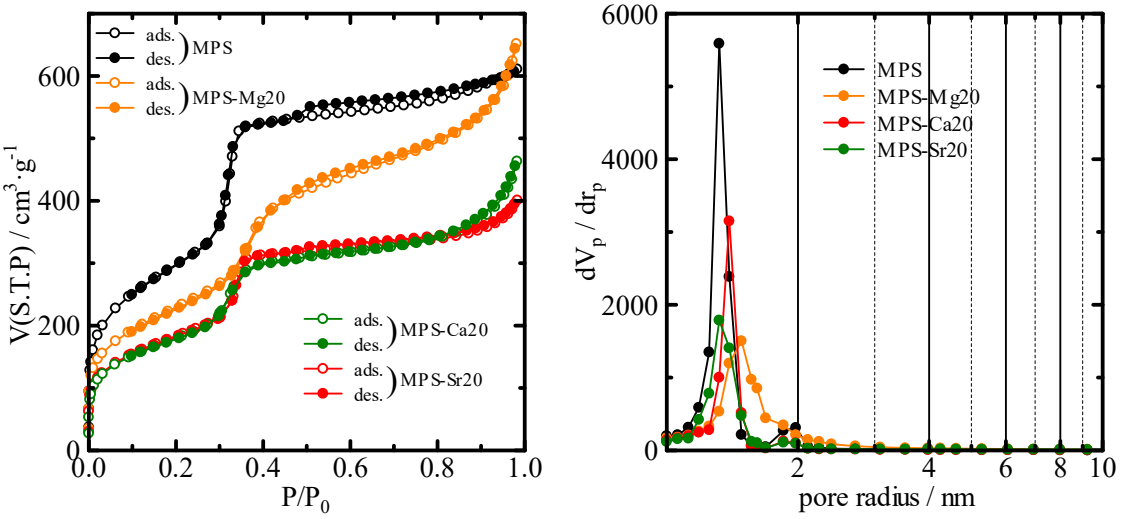

Figure S3 Isotherms and pore size distributions of MPS, MPS-Mg20, MPS-Ca20, and MPS-Sr20

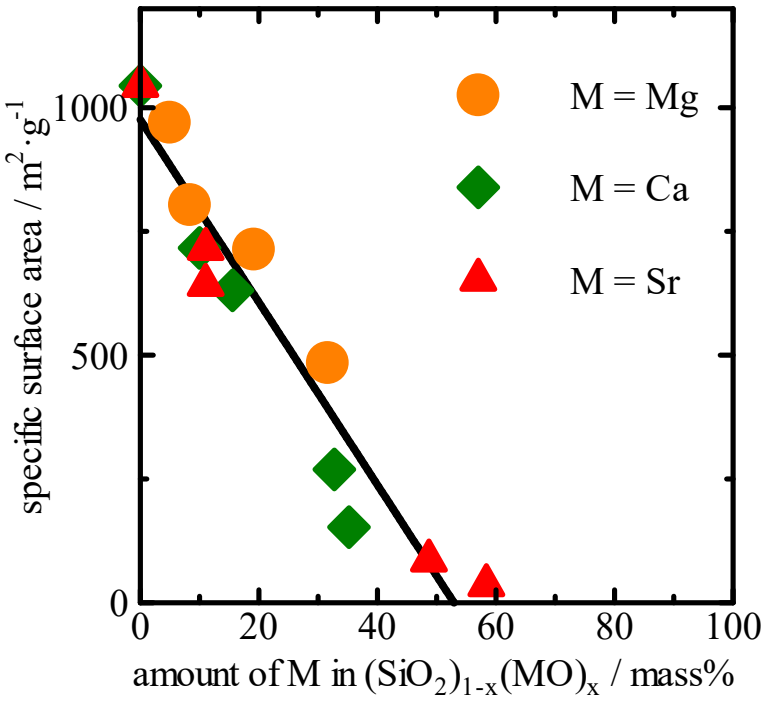

Figure S4 Relationships between the mass fraction of the substituent and specific surface area.

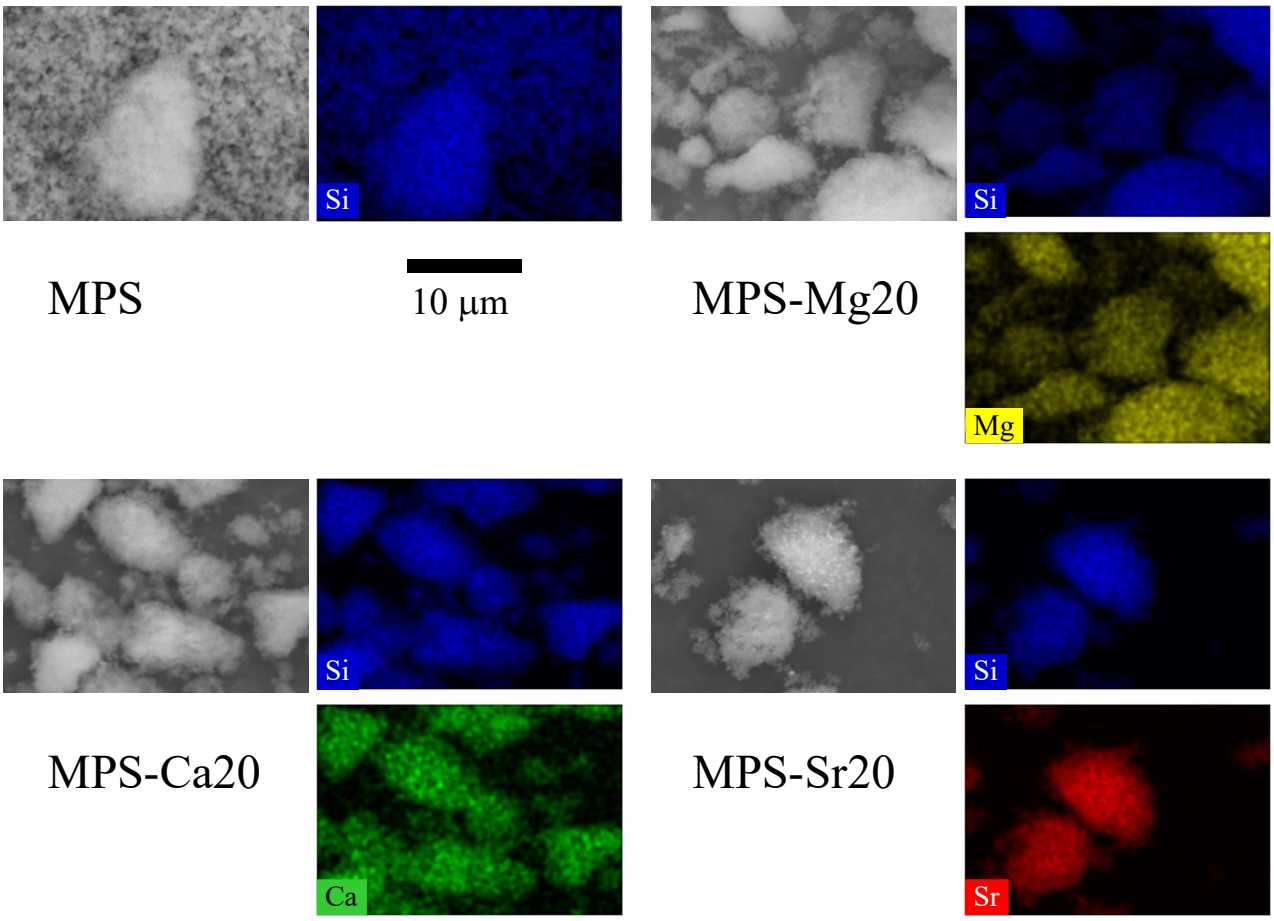

Figure S5 SEM micrographs and elemental mapping of MPS, MPS-Mg20, -Ca20, and –Sr20

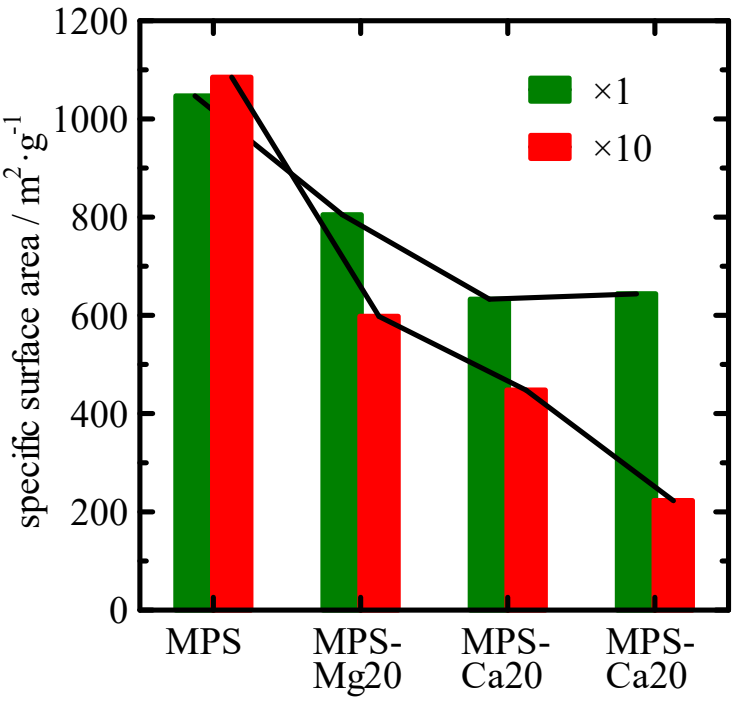

Figure S6 A change in specific surface area of MPS, MPS-Mg20, -Ca20, and -Sr20 prepared from the waste glass with a scale-up by 10.

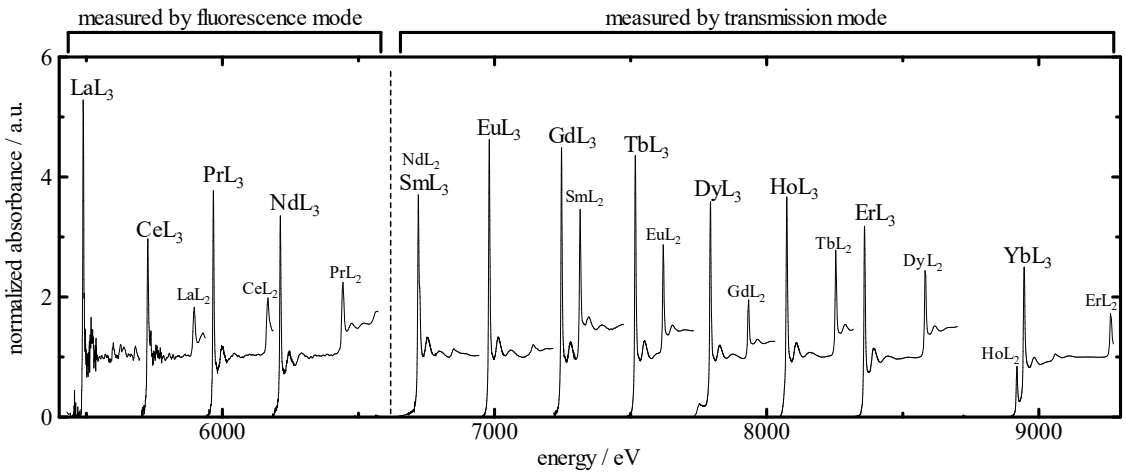

Figure S7 Wide-range XAFS spectra of lanthanoid elements in the MPS-hybrid after ion exchange treatment.

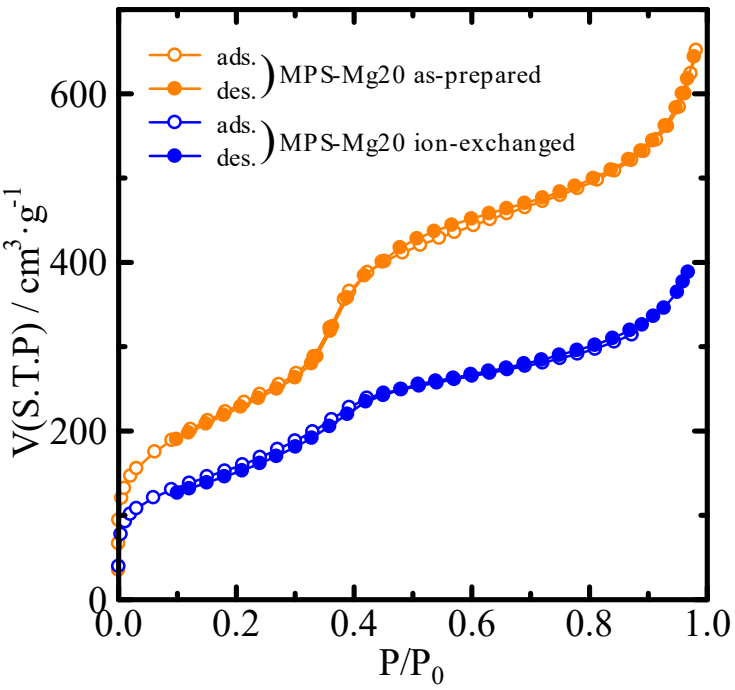

Figure S8 Isotherms of the as-prepared and the ion-exchanged MPS-Mg20