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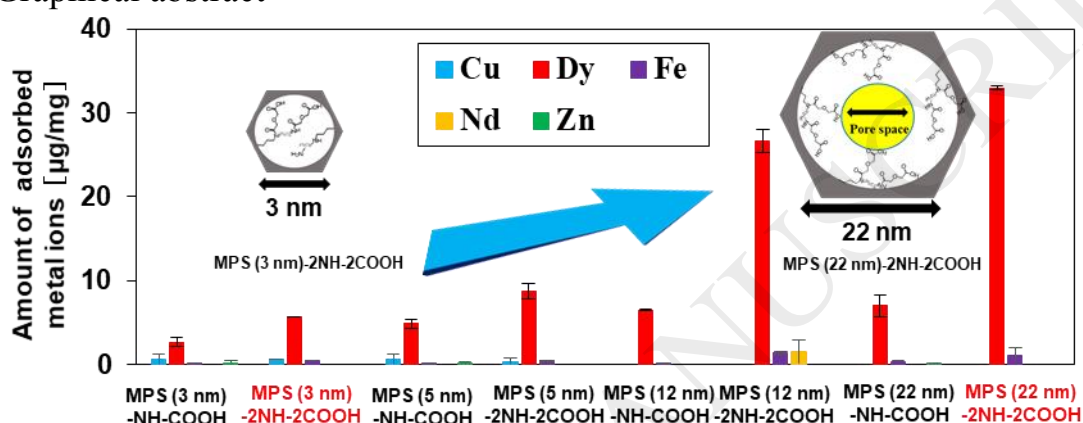
**Highlights** • Amino- and carboxyl-functionalized mesoporous silica (MPS)

selectively adsorbed Dy ion.

- The pore space of 22 nm in functionalized MPS was essential for increasing Dy ion adsorption.

- The materials retained 100% adsorption capacity after 5 cycles performance.

Graphical abstract



Optimization of carboxyl-functionalized mesoporous silica for the selective adsorption of dysprosium

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