Zr^{4+} MOFS WITH HIGH EFFICIENCY FOR REMOVAL OF TOXIC ANION SPECIES FROM AQUEOUS MEDIA

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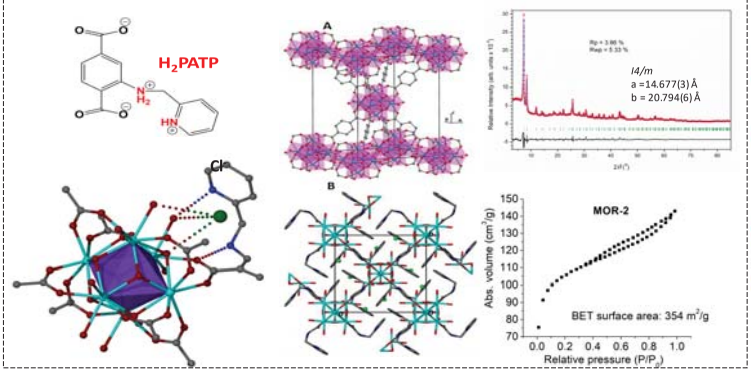
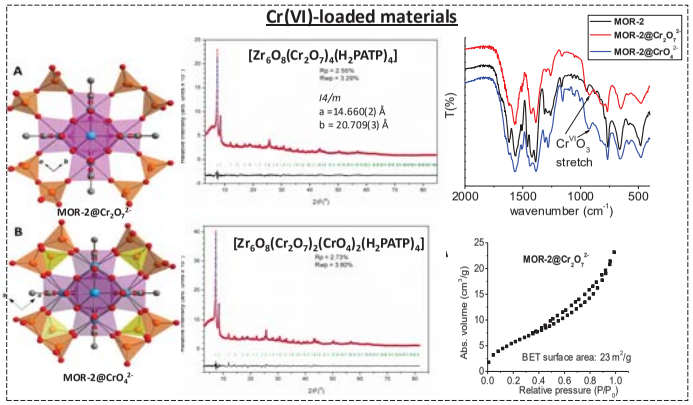
We present a new Zr^{4+} MOF, $H_{16}[Zr_6O_{16}(H_2PATP)_4]Cl_8{\cdot}xH_2O$ (**MOR-2**) (H_2PATP=2-((pyridin-1-ium-2-ylmethyl)ammonio)terephthalate). This material has shown exceptional sorption capability for anionic pollutants, including carcinogenic Cr(VI) and radioactive TcO_4^-. **MOR-2** exhibits record Cr(VI) and TcO_4^- sorption capacities, as a result of its 8-connected structure favoring the strong binding of anions into the Zr_6 SBUs. Importantly, **MOR-2** in its composite forms with alginic acid (HA) was utilized in ion exchange columns, which show capability for ~ 100% removal of anionic pollutants from water (including industrial waste) and can be regenerated and reused for several cycles with almost no loss of its initial sorption capacity.

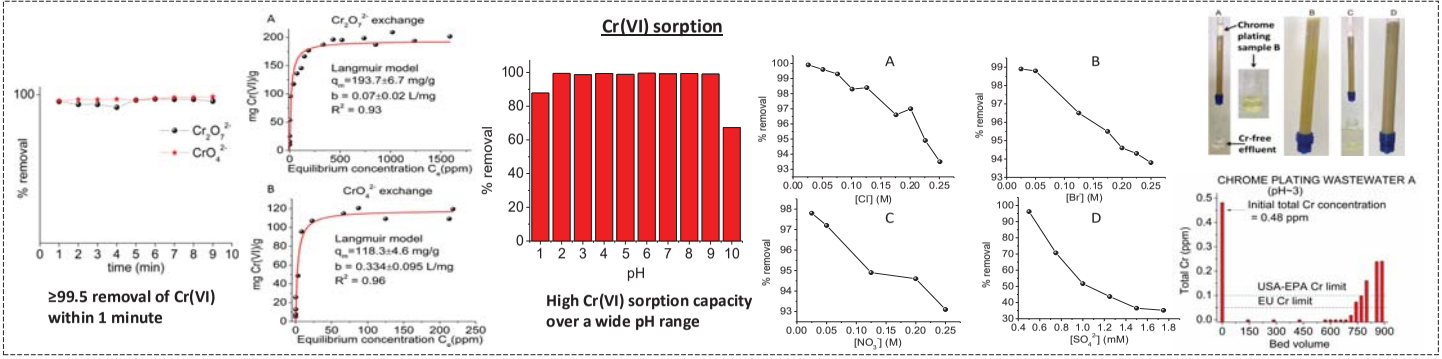
Structure-characterization



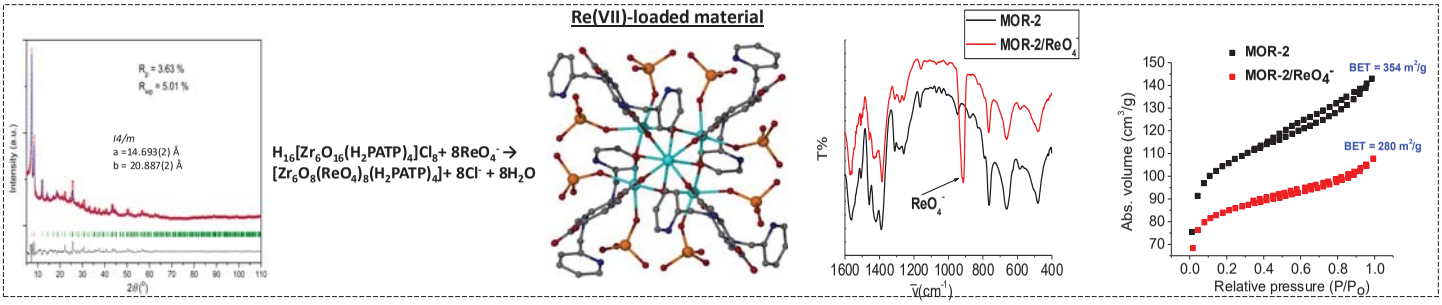
Cr(VI)-loaded materials



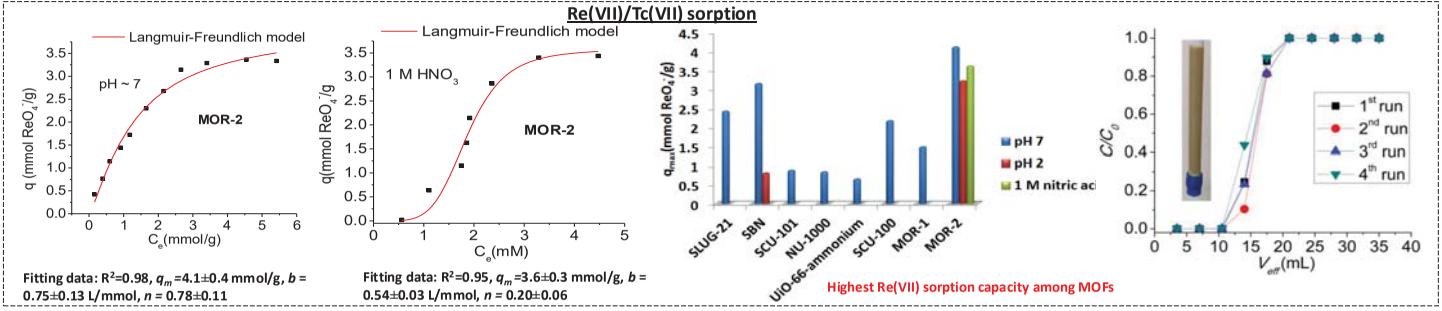
Cr(VI) sorption



Re(VII)-loaded material



Re(VII)/Tc(VII) sorption



Acknowledgments

The research work was supported by the Hellenic Foundation for Research and Innovation (H.F.R.I.) under the "First Call for H.F.R.I. Research Projects to support Faculty members and Researchers and the procurement of high-cost research equipment grant" (Project Number: 348).

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2. S. Rapti et. al. *J. Mater. Chem. A*, **2018**, *6*, 20813.