

## A Novel Microporous Vanadosilicate with Hexadeca-Coordinated Cs<sup>+</sup> Ions as a Highly Effective Cs<sup>+</sup> Remover

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The effective removal of <sup>137</sup>Cs<sup>+</sup> ions from contaminated groundwater and seawater and from radioactive nuclear waste solutions is crucial for public health and for the continuous operation of nuclear power plants. Various <sup>137</sup>Cs<sup>+</sup> removers have been developed, but more effective <sup>137</sup>Cs<sup>+</sup> removers are still needed. We recently reported a novel microporous vanadosilicate with mixed-valence vanadium (V<sup>4+</sup> and V<sup>5+</sup>) ions, which shows an excellent ability for Cs<sup>+</sup> capture and immobilization from groundwater, seawater, and nuclear waste solutions (Angew. Chem. Int. Ed. 2014, 53, 7203-7208). This material is superior to other known materials in terms of selectivity, capacity, and kinetics, and at very low Cs<sup>+</sup> concentrations, it was found to be the most effective material for the removal of radioactive Cs<sup>+</sup> ions under the test conditions. This novel vanadosilicate also contains hexadeca-coordinated Cs<sup>+</sup> ions, which corresponds to the highest coordination number ever described. We will also present the properties of the related materials.