

Development of Potassium and Bromide Ions Memorized Inorganic
Ion-exchangers

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Summary

To develop potassium ion memorized inorganic ion-exchangers, potassium ions of specially selected synthetic $K_2W_4O_{13}$ and $KNbWO_6$ samples, which have tunnel crystal structures, have been ion-exchanged for sodium ions in molten sodium nitrate at 330 °C or for protons in aqueous nitric acid solutions at 25 °C.

Proton-exchanged potassium tungstates (for example, $H_{0.25}K_{1.75}W_4O_{13}$ and $H_{0.17}K_{0.83}NbWO_6$) were found to have the feasibility of the potassium memorized exchangers, but sodium-exchanged potassium tungstates ($Na_xK_{2-x}W_4O_{13}$) were not easily exchanged for potassium ions in aqueous solutions at room temperature, because of stabilized sodium ions in the exchanged samples.

To develop bromide ion memorized exchangers, $Ca_{10}(PO_4)_6Br_2$ and $Pb_{10}(PO_4)_6Br_2$ have been synthesized and the anion-exchange characteristics of Br^- in them for Cl^- in aqueous solutions have been investigated.

The development of bromide ion memorized exchangers is now the first stage and details will be discussed in following reports.