

## Molecular Design of Potassium Specific Host for Highly Pure Salt Production

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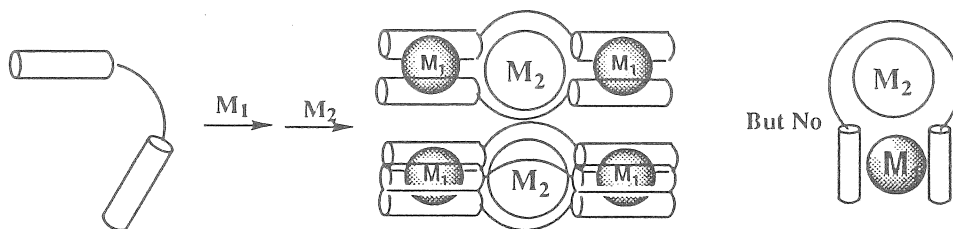
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### Summary

Self-organization approach for the efficient and selective extraction and detection of potassium ion has been developed. In order to achieve this purpose, novel prehosts having simple linear structures, but capable of organizing their structures into the real hosts on transition metal complexation have been synthesized and their properties were characterized.

As a further extension of such metal-organization principle, a new prehost was synthesized, where intramolecular complexation with transition metals was prohibited by the employment of shorter ether linkage to promote 2:2 or 3:2 prehost/metal complexation, giving rise to macro monocyclic or bicyclic pseudocrowns depending on the valence of transition metals, respectively. For these metal ions, Cu(II), Cr(III) and Fe(III) metal ions were employed. Among the hosts organized by transition metal complexation, Fe-organized macrobicyclic host showed the maximum extraction at  $K^+$  as well as  $Sr^{2+}$  ions for alkali and alkaline earth metal ions, respectively.

The macrobicyclic 3:2 complex was hydrophilic enough to be partially released into the aqueous phase on the extraction with metal picrates, but remained satisfactorily in the organic phase and extracted alkali and alkaline metal cations more effectively by the use of more hydrophilic counter anion, 8-anilino-naphthalene-1-sulfonate.



$M_1$ (transition metal),  $M_2$ (alkali and alkaline earth metal)