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(54) Title: **SEPARATING AND CONCENTRATING CERTAIN IONS USING ION-BINDING LIGANDS BONDED TO MEMBRANES**

(57) Abstract

A method for removing, separating and concentrating certain selected ions from a source solution that may contain larger concentrations of other ions comprises bringing the source solution in contact with a composition comprising an ion-binding ligand covalently bonded to a membrane having hydrophilic surface properties. The ligand portion of the composition has affinity for and forms a complex with the selected ions, thereby removing them from the source solution. The selected ions are then removed from the composition through contact with a much smaller volume of a receiving solution in which the selected ions are either soluble or which has greater affinity for the selected ions than does the ligand portion of the composition, thereby quantitatively stripping the complexed ions from the ligand and recovering them in concentrated form in the receiving solution. The concentrated ions thus removed may be further separated and recovered by known methods. The process is useful in the removal of selected ions, including noble metals and other transition metals from a variety of source solutions such as are encountered in semiconductor, nuclear waste cleanup, metals refining, environmental cleanup, providing ultra high purity fluids, electric power, and other industrial enterprises. The invention is also drawn to the ligand-membrane compositions.

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