

Application of Copper(II)-di-(2-Ethylhexyl) -Phosphate for Cation-Exchange Extraction from Molten Nitrate Salt(Chemistry)

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X-Ray Photoelectron Spectroscopy of Manganese-Oxygen Systems

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J. Electron Spectrosc. & Relat. Phenom., **7** (1975), 465.

The Mn 2p, Mn 3s, Mn 3p, and O 1s spectra of various manganese oxides were studied at room temperature, 200°C and 400°C. The binding energies of manganese core electrons for MnO did not change after the sample had been exposed to air. The spectra of α -Mn₂O₃ and β -MnO₂ heated to 400°C were identical to that of Mn₃O₄, which is the most thermodynamically stable species. Neither the two oxidation states of Mn in Mn₃O₄ nor the Mn site differences in γ -Mn₂O₃ were distinguishable by XPS. Satellite peaks were observed for manganese core electron peaks, which were sensitive to the surface conditions. The shake-up energy in the manganese oxides decreased markedly between the d⁴ and d⁵ materials.

The Chemistry of Americium. III. The Coprecipitation of Am(III), Am(V), and Am(VI) by Some Fluorides and Phosphates

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Bull. Chem. Soc. Japan, **48** (1975), 1431.

The radiochemical behavior of americium in the coprecipitation process involving a precipitate such as lanthanum, thorium, and ceric fluorides, zirconium, and bismuth phosphates was investigated at the tracer concentrations of americium. All the precipitates except zirconium phosphate completely carried the Am(III), leaving the Am(VI) in the supernatant. The lanthanum and thorium fluorides carried portions of the Am(V) in proportion to the amounts of the metal ion of the carrier added under any given conditions. Then, the analytical conditions were established for determining the distributions of the oxidation states of americium.

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The H⁺-problem, which was pointed out by Foos and Guillaumont on the extraction system between the molten nitrate salt and the chelate or cation-exchange extractant, can be overcome by the use of its metal-salt form as the extractant. And the copper(II)-di-(2-ethylhexyl)-phosphate is effective as the extractant from the molten nitrate mixture. A possible cation-exchange reaction is proposed to explain the above extraction.