

UNCLASSIFIED

AD 400 584

DEFENSE DOCUMENTATION CENTER

FOR

SCIENTIFIC AND TECHNICAL INFORMATION

CAMERON STATION, ALEXANDRIA, VIRGINIA



UNCLASSIFIED

NOTICE: When government or other drawings, specifications or other data are used for any purpose other than in connection with a definitely related government procurement operation, the U. S. Government thereby incurs no responsibility, nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use or sell any patented invention that may in any way be related thereto.

①400584

22

S/830/62/000/002/001/002
D214/D308

STEP

AUTHORS:

⑧ Nikolayev, A.V., Sinitsyn, N.M. and Shubina, S.M.

TITLE:

⑥ Acceptor-donor concepts as applied to extraction

SOURCE:

⑬ Ekstraktsiya; teoriya, primeneniye, apparatura, no. 2, Ed. by A.P.Zefirov and M.M. Senyavin. Moscow, Gosatomizdat, 1962, 63 - 70

TEXT:

The influence of various groups present in an extracting agent on the extraction ability of the agent was studied. In the series of extracting agents $(C_4H_9O)_{3-n}(C_4H_9)_nPO$ (where $n = 0, 1, 2, 3$) the P-oxygen was found to be active and responsible for the formation of the complex $UO_2(NO_3)_2 \cdot 2A$ (where A - extracting agent) by donation of electrons to $(UO_2)^{2+}$. As the value of n rises the electron density on the P-oxygen increases
Card 1/2

AD NO. ASTIA FILE COPY

Acceptor-donor concepts ...

S/830/62/000/002/001/002
D214/D308

and hence the extraction power of the agent increases. This was verified on U^{VI} , Th^{IV} , Pu^{IV} and Pu^{VI} . The introduction of an electronegative radical into the molecule of the agent will reduce the extraction power while the presence of highly branched chains will prevent the formation of the complex by steric hindrance. Similar arguments apply to the $R_{3-n}P(OR')_n$ type of extracting agent. An extracting agent must, therefore, be sufficiently polar to permit the formation of the complex but the polarity must not be such that the agent becomes water-soluble or that the resulting complex becomes insoluble in nonpolar solvents. It now remains to determine the permissible polarity limits. There are 2 figures and 4 tables.

Card 2/2