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## Phosphorus, Sulfur, and Silicon and the Related Elements

Publication details, including instructions for authors and subscription information:

<http://www.informaworld.com/smpp/title~content=t713618290>

### Crown-Containing N-(Thio)Phosphoryl-(Thio)Ureas, their Ligand Properties and Analytical Application

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**To cite this Article** Shaidarova, Larisa G. , Popescu, Larisa G. , Nikolay, Ulakhovich, A. , Budnikov, Herman C. , Zabiroy, Nail G. and Brus'ko, Vasiliy (1999) 'Crown-Containing N-(Thio)Phosphoryl-(Thio)Ureas, their Ligand Properties and Analytical Application', *Phosphorus, Sulfur, and Silicon and the Related Elements*, 147: 1, 451

**To link to this Article:** DOI: 10.1080/10426509908053705

**URL:** <http://dx.doi.org/10.1080/10426509908053705>

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## **Crown-Containing N-(Thio)Phosphoryl-(Thio)Ureas, their Ligand Properties and Analytical Application**

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Crown-containing N-(thio)phosphoryl(thio)ureas are related to a class of NH-acids due to the presence of two acceptor-groups: (thio)phosphorylic and (thio)acylic. In agreement with structure of lariat ether, it was observed a stage corresponding to the step ejection of two  $H^+$  ion on the potentiometric titration curve of ligand by alkaline. Calculated step ionization constants demonstrate that these compounds are weak acids with relative values of  $pK_1$  and  $pK_2$ .

On the base of data obtained by UV spectroscopy and potentiometry, it was concluded that metal complexation of transition 3d-metals Co (II), Ni (II), Cu (II) with crown-containing N-(thio)phosphoryl(thio)ureas resulted in chelate formation. It is established that metal complexes with these lariat ethers are more stable than complexes with their component fragments. The stability of metal complexes in many respects determines their electrochemical behaviour on electrode. Reduction of more stable complexes possessing a central atom in occurrence of four sulfur atoms ( $MS_4$ ) occurs at more negative potentials and oxidation at more positive potentials than of complexes with coordination centre  $MO_2S_2$ .

Received data about ligand and electrochemical properties of lariat ethers have a practical significance for analytical chemistry. Investigated ligands can be suggested as organic reagent for metal ion determination. Using of examined lariat ethers as modifiers of chemical sensors permits to increase sensitivity of metals determination.