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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>

Complex Formation of Phosphoryl- and Thiophosphorylacetonitriles with Different Cations

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Online publication date: 27 October 2010

To cite this Article Matveeva, Anna , Starikova, Zoya , Passechnik, Margarita , Odinets, Irina and Mastryukova, Tatyana(2010) 'Complex Formation of Phosphoryl- and Thiophosphorylacetonitriles with Different Cations', *Phosphorus, Sulfur, and Silicon and the Related Elements*, 177: 8, 2155

To link to this Article: DOI: 10.1080/10426500213436

URL: <http://dx.doi.org/10.1080/10426500213436>

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COMPLEX FORMATION OF PHOSPHORYL- AND THIOPHOSPHORYLACYLACETONITRILES WITH DIFFERENT CATIONS

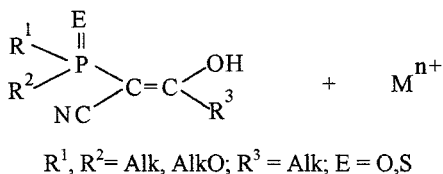
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(Received July 29, 2001; accepted December 25, 2001)

The enols $R^1R^2P(E)(CN)C = CR^3OH$ ($E = O$ or S) gave in solutions either neutral metal complexes ML_x or $M(OH)_yL_x$. The anionic ambidentate ligands are coordinated through E and O atoms in solutions, and O , E , and N atoms in in crystals.

Keywords: Metal complexes; phosphoryl(thiophosphoryl)acylacetonitriles

Complex formation of the enol forms of the titled compounds (HL) with cations Mg^{2+} , Mn^{2+} , Ni^{2+} , Co^{2+} , Cu^{2+} , and Cu^+ in various solvents was studied by potentiometry, UV-vis, IR, Raman, and ESR spectroscopy.



SCHEME 1

Chelate-bridging complexes of enols with Co^{2+} , Cu^{2+} , and Cu^+ were obtained and investigated by x-ray analysis, IR, and Raman spectroscopy. In some cases complexation HL with copper was accompanied oxidation-reduction reaction yielding only to Cu^{2+} complex when $E = O$ and to Cu^+ complex when $E = S$. An appreciable electron delocalization in contour of tridentate ligands was found.

This work supported by Russian Basic Research Foundation (grant No 00-15-97386).

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