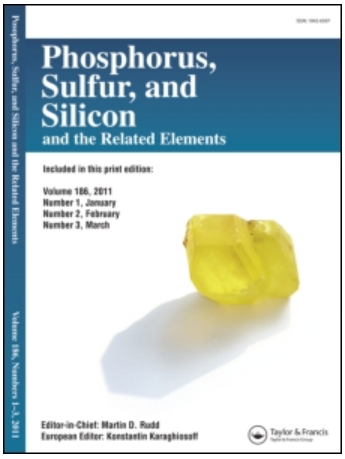

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Synthesis and Properties of the Novel Functionalized Aminophosphoryl Compounds

Rafael Cherkasov[a]; Sergey Zaharov[a]; Airat Garifzyanov[a]
[a] Kazan State University, Russia

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SYNTHESIS AND PROPERTIES OF THE NOVEL FUNCTIONALIZED AMINOPHOSPHORYL COMPOUNDS

Rafael Cherkasov, Sergey Zaharov, and Airat Garifzyanov
Kazan State University, Russia

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To discover the new extractants with high efficiency and selectivity in respect to the metal cations we have synthetized a number of functionalized derivatives of aminophosphoryl compounds containing substituted aliphatic diamine bridge with terminal phosphoryl groups. In our opinion this might provide the enhanced complexing capacity of abovementioned compounds due to the formation of stable chelate cycles. The derivatives synthetized are of general formula:

$$(R^1)_2P(O)CR^2R^3N(R^4)\text{—}A\text{—}N(R^4)CR^3R^2P(O)(R^1)_2$$

a. $R^1 = n\text{-}C_8H_{17}O$; $R^2 = R^3 = H$; $R^4 = C_4H_9$; A = —$CH_2CH(OH)CH_2$—
b. $R^1 = n\text{-}C_8H_{17}$; $R^2 = R^3 = H$; $R^4 = C_4H_9$; A = —$(CH_2)_2$—
c. $R^1 = C_6H_5$; $R^2 = R^3 = H$; $R^4 = C_4H_9$; A = —$CH_2CH(OH)CH_2$—
d. R^1 = p-Tolyl; $R^2 = R^3 = H$; $R^4 = HOCH_2CH_2$; A = —$(CH_2)_2$—
e. $R^1 = n\text{-}C_6H_{13}$; $R^2 = R^3 = H$; R^4 = —$(CH_2)_2O(CH_2)_2O(CH_2)_2$—;
A = —$(CH_2)_2O(CH_2)_2O(CH_2)_2$—

We have used three-component one-pot scheme of Kabachnik-Fields reaction, involving appropriate hydrophosphoryl compound, paraformaldehyde and diamine (in the case **e**—diazacrown ether). The structure of substances obtained was confirmed using spectroscopy NMR P^{31}, H^1, and element analysis methods.

It was established that all compounds indicate affinity to the ions of alkaline metals. It must be specially noted, that ionselective electrode with liquid membrane containing substance **b** is distinct for its selectivity towards the copper(II) ion, and in the case of **a** lithium ion selectivity has been observed.

Address correspondence to Rafael Cherkasov, Department of Chemistry, Kazan State University, Kazan, 420008, Russia. E-mail: Rafael.Cherkasov@ksu.ru