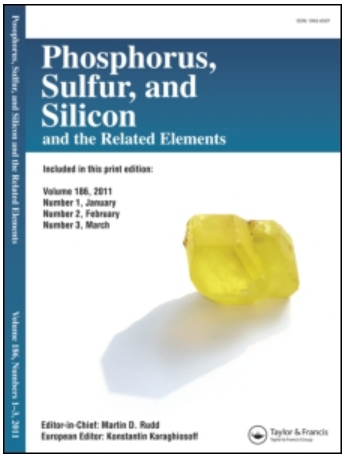

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A Study of Ammonium Mono-, Di- and Triphosphate Heterogeneous Systems in View of their Use as Liquid Fertilizers

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A Study of Ammonium Mono-, Di- and Triphosphate Heterogeneous Systems in View of their Use as Liquid Fertilizers

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Ammonium phosphates belong among principal compounds of multicomponent liquid fertilizers and thus this study has been directed toward agrochemical application. For this reason, in the system of NH_4^+, H^+ PO_4^{3-}, $P_2O_7^{4-}$, $P_3O_{10}^{5-}$ - H_2O, the subsystem, $NH_4H_2PO_4$ - $(NH_4)_2H_2P_2O_7$ - $(NH_4)_3H_2P_3O_{10}$ - - $(NH_4)_3PO_4$ - $(NH_4)_4P_2O_7$ - $(NH_4)_5P_3O_{10}$ - H_2O, was studied in which the pH of saturated solutions varies from 5 to 8. The solubility was studied in the partial pseudoternary systems. The experimental temperatures were selected immediately above the corresponding cryohydratic points, from 0 to -8°C. The sum of the results obtained can be schematically represented as a set of the curves of simultaneous crystallization of two solids on the mantle of a trigonal prism which represents the salt composition of the studied system.

It can be seen from the results obtained that the highest N/P ratio is attained in phosphate systems containing relatively low concentrations of saturated solutions and thus also low concentrations of agrochemically effective components (nitrogen and phosphorus pentaoxide). The highest concentrations are attained in saturated solutions containing $(NH_4)_4HP_3O_{10}$ and $(NH_4)_3H_2P_3O_{10}$, $(NH_4)_4HP_3O_{10}$ and $NH_4H_2PO_4$, or $(NH_4)_4HP_3O_{10}$ and $(NH_4)_3HP_2O_7$, with a nutritional value of more than 50%.