

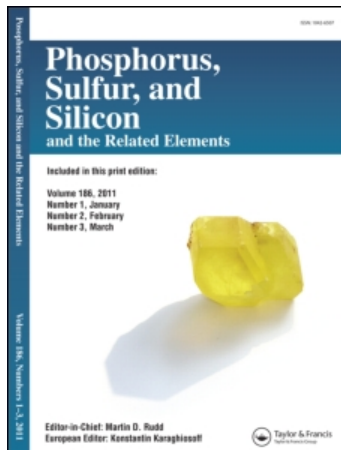
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THE PROPERTIES OF AMMONIUM MONOPHOSPHATE SALT SYSTEMS

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For the full description of the salt systems one has to know besides the chemical and phase composition data, the physico-chemical properties of salt dispersions: the hygroscopicity H , the cacing C and the autogesion A .

The systems investigated were $\text{NH}_4\text{H}_2\text{PO}_4\text{-KH}_2\text{PO}_4$ (I), $\text{NH}_4\text{H}_2\text{PO}_4\text{-NH}_4\text{NO}_3$ (II) and $\text{NH}_4\text{H}_2\text{PO}_4\text{-KCl}$ (III). It was found out that in system I solid solutions are formed at any component ratio, and H and C are low; in system II and III H and C are changing simultaneously and there is maximum near the equimolar point (Fig. 1a). The formation of solid solutions $\{\text{NH}_4, \text{K}\}\text{NO}_3$ and $\{\text{NH}_4, \text{K}\}\text{Cl}$ or double salt $\text{NH}_4\text{NO}_3 \cdot 2\text{KNO}_3$ results in harsh decrease of H and C . Introduction of foreign cations: Mg^{2+} , Fe^{3+} , Al^{3+} , Co^{2+} , etc. into the lattice leads to decrease of H and C proportionally to the cation radius. The hypothesis has been worked out according to which H and C depends upon the density of dislocations in surface layers of crystals.¹ Autogesion A increases with the growth of nitrates content (Fig. 1a).

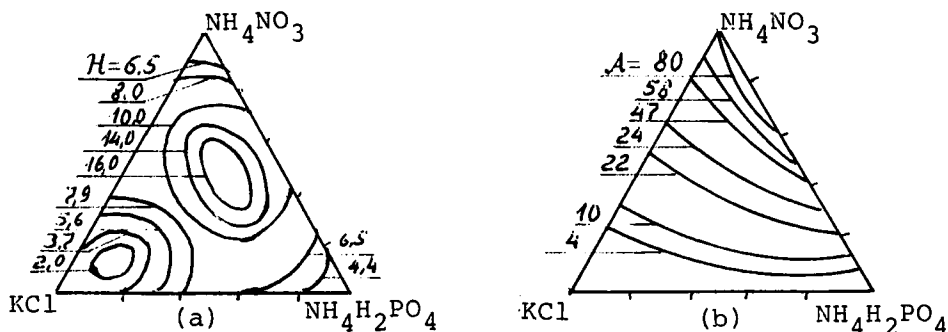


FIG. 1. Hygroscopicity H (mmol/g h) and cacing C (kPa) (a) and autogesion A (kPa) (b) in the system III. $C = 52H$.

1. I.M.Kuvshinnikov. Mineral fertilizers and salts. Properties and means for their improvement. Moscow, 1987, 256 p.