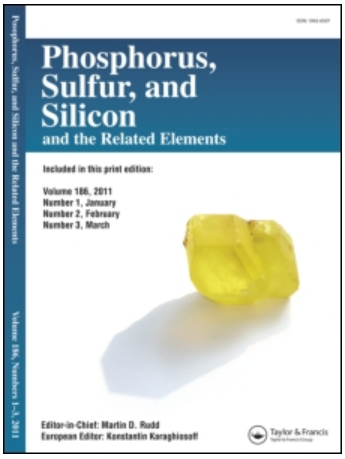

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The Properties of Ammonium Monophosphate Salt Systems

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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 hygroscopisity H, the cacing C and the autogesion A.

The systems investigated were $NH_4H_2PO_4$-KH_2PO_4 (I), $NH_4H_2PO_4$-NH_4NO_3 (II) and $NH_4H_2PO_4$-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 $\{NH_4,K\}NO_3$ and $\{NH_4,K\}Cl$ or double salt $NH_4NO_3 \cdot 2KNO_3$ 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 crystalls.[1] Autogesion A increases with the growth of nitrates content (Fig. 1a).

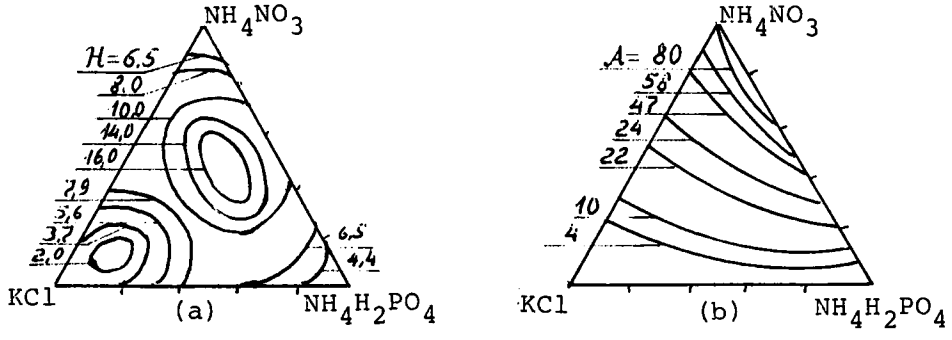

FIG. 1. Hygroscopicity H (mmol/g h) and cacing C (kPa) (a) and autogesion A (kPa) (b) in the system III. C = 52H.

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