BUFFER CAPACITY IN HETEROGENEOUS MULTICOMPONENT SYSTEMS. REVIEW

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Abstract. The quantitative basis of the theory of buffer properties for two-phase acid-base buffer systems and for multicomponent heterogeneous systems has been derived. The analytical equations for buffer action with respect to all components for diverse multicomponent systems were deduced. It was found a remarkable relation of proportionality between β_i quantities. It is shown, that the buffer properties in relation to the solid phase components are amplified with an increase of solubility due to protolytic or complex formation equilibria in saturated solutions. It has been established, that the buffer capacities of components are mutually proportional, whereas for heterogeneous systems these relationships depend on the stoichiometric composition of solid phases. The deduced equations can be applied to the assessment of buffer action of the systems "Natural mineral – soil solution", containing soluble and insoluble chemical species. A number of the important conclusions concerning the investigated buffer systems has been made. The obtained results can be used in various areas of chemical and biochemical researches, especially in soil science, ecological sciences, analytical chemistry, pharmacology, pharmaceutics, medical industry and synthetic organic chemistry