

Physical chemistry of processes on multicomponent substance-solution border. Composition and surface structure.

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Abstract

With using before the put forward assumption of an establishment of seeming balance on border multicomponent substance of type $A^{III}B^V - H_2O$ (pH) and selective, uniform and pseudo-selective destruction (dissolution, oxidation) of substances a possible set potential determinative reactions is specified, values of their potentials are calculated and dependences electrode potential – pH (diagrams of Pourbaix) are constructed. On this basis the concept is constructed, allowing expect to structure variants of the superficial phase layer, capable to be formed in the conditions of processing of semiconductors surface without and with imposing of external electric field at different size values of electrode potentials and pH. It is shown that balance concerning an electronegative component (A) is displaced in an anode direction, therefore on border the semiconductor – a superficial phase layer (or electrolyte – in the absence of the last) the near-surface crystal layer is formed which has been impoverished by a component A. With using diffusion representations its extent is calculated; it can reach size from 5 to 500 nanometers. The presence of such layer is detected by results of X-ray diffraction analysis.