Record Nr.	UNINA9910825283403321
Autore	Dybkov V. I (Vasilii Ivanovich)
Titolo	Growth kinetics of chemical compound layers / / V.I. Dybkov
Pubbl/distr/stampa	Cambridge, : Cambridge International Science, 2004
ISBN	1-280-50065-4 9786610500659 1-904602-84-3
Descrizione fisica	1 online resource (201 p.)
Disciplina	541.394
Soggetti	Chemical kinetics Chemical engineering
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di contenuto	Intro INTRODUCTORY REMARKS 1. SOLID-STATE GROWTH OF A CHEMICAL COMPOUND LAYER AT THE INTERFACE OF TWO ELEMENTARY SUBSTANCES 1.1 Special features of description of the kinetics of solid-state heterogeneous reactions 1.2 Reaction diffusion 1.3 Growth of the ApBq layer at the expense of diffusion of only component B 1.3.1 Critical thickness of the ApBq layer with regard to component B 1.3.2 Growth regime of the ApBq layer with regard to component B: Theoretical definition 1.3.3. Stationary state or stationary point? 1.4. Growth of the ApBq layer at the expense of diffusion of components A and B 1.4.1 Critical thickness and the growth regime of the ApBq layer with regard to component A 1.4.2 General kinetic equation: a single compound layer 1.4.3. Separate determination of the reaction diffusion constants 1.5. Linear growth of the Cu6Sn5 layer in the copper-tin reaction couple 1.6. Parabolic growth of the AlSb layer in the aluminium-antimony diffusion couple 1.7 Linear-parabolic growth of the chemical compound layer 1.8. The ratio of diffusion coefficients of a component in growing and nongrowing chemical compound layers 1.9 Growth of the layer of a single compound: Brief conclusions 2. GROWTH OF THE LAYERS OF TWO CHEMICAL COMPOUNDS BETWEEN ELEMENTARY SUBSTANCES 2.1. Chemical reactions at phase interfaces 2.2. A system of

1.

differential equations describing the formation rate of the layers of two chemical compounds -- 2.3. Initial linear growth of the ApBg and ArBs layers -- 2.4. Minimal thickness of the ArBs layer necessary for the ApBg layer to grow -- 2.5 Non-linear growth of the ApBg and ArBs layers -- 2.6 Effect of the critical thickness of the ApBg layer with regard to component A on the process of growth of the ArBs layer --2.7 'Paralinear' stage of growth of two compound layers. 2.8 Diffusional stage of growth of the ApBq and ArBs layers -- 2.9 Growth of the layers of two compounds: brief conclusions -- 3. GROWTH OF COMPOUND LAYERS IN A MULTIPHASE BINARY SYSTEM --3.1 Chemical reactions at the phase interfaces of a multiphase binary system -- 3.2 A system of differential equations describing the growth process of layers of three chemical compounds between elementary substances A and B -- 3.3 Initial linear growth of the layers -- 3.4 Transition from linear to non-linear kinetics -- 3.5 Critical values of the thickness of the layers and their effect on growth kinetics -- 3.6 Diffusional stage of formation of the layers -- 3.7 Sequence of formation of the layers of chemical compounds in the A-B reaction couple of a multiphase binary system -- 3.8 Multiphase growth of compound layers: brief conclusions -- 4. THE EFFECT OF COMPOSITIONS OF INITIAL PHASES ON THE GROWTH RATE OF A CHEMICAL COMPOUND LAYER -- 4.1 Growth of the ArBs layer at the A-B interface -- 4.2 Growth of the ArBs layer at the ApBq-B interface --4.2.1 Growth of the ArBs layer between ApBg and B at the expense of diffusion of only component A -- 4.2.2 Growth of the ArBs layer between ApBq and B at the expense of diffusion of both components --4.3 Growth of the ArBs layer at the ApBg - AlBn interface -- 4.4 Comparison of the growth rates of the ArBs layer in different reaction couples of the A - B multiphase system -- 4.5 Duplex structure of the ArBs layer -- 4.6 The effect of compositions of initial phases on the growth rate of a chemical compound layer: brief conclusions -- 5. THE EFFECT OF DISSOLUTION (EVAPORATION) ON THE GROWTH RATE OF A CHEMICAL COMPOUND LAYER -- 5.1 Main relationships governing dissolution of a solid in a liquid -- 5.2 Experimental investigation of the process of dissolution of a solid in a liquid. 5.2.1 Determination of saturation concentration -- 5.2.2 Determination of the dissolution rate constant -- 5.2.3 Determination of diffusion coefficients -- 5.3 Growth kinetics of the layer of a chemical compound under the conditions of its simultaneous dissolution in the liquid phase -- 5.4 Growth kinetics of intermetallic lavers at the transition metalliquid aluminium interface -- 5.5 Special features of kinetic dependences in the solid-gas system -- 5.5.1 Influence of evaporation on the growth of a chemical compound layer -- 5.5.2 Oxidation of chemical compounds -- 5.6 The effect of dissolution (evaporation) on the growth rate of a chemical compound layer: brief conclusions --FINAL REMARKS -- REFERENCES -- Index.