CONTENTS

	v.	Page
PREFACE .		VIII
CHAPTER 1	EVOLUTION IN METHODS OF INVESTIGATION AND CONCEPTS	1
I-I	Surface science and adsorption	1
1-II	Evolution of experimental methods	2
1-III	Evolution of concepts	4
1-IV	Towards a general approach to adsorption on metals	6
CHAPTER 2	PROPERTIES OF CLEAN METAL SUBSTRATES	9
2 - I	Ideal structures : atomic models	9
2-11	Real surfaces : relaxation and reconstruction	14
2-111	Real surfaces : surface defects	20
2 - IV	Thermodynamic properties of clean surfaces	29
2-V	Surface dynamics and surface diffusion	34
	References	41
CHAPTER 3	EQUILIBRIUM ADSORPTION AND SURFACE SEGREGATION	44
3 - I	Unified treatment of adsorption and segregation phenomena	44
3 - II	Thermodynamics of adsorption and segregation in dilute	
	binary systems	46
3-III	The measurement of adsorbed quantities	59
3-IV	Surface composition in concentrated binary mixtures	71
3 - V	Adsorption and segregation on well-defined surfaces	78
	References	97
CHAPTER 4	STRUCTURE AND CRYSTALLOGRAPHY OF ADSORBED LAYERS	100
4-I	General remarks on the two-dimensional state and	
	diffraction	101
4-II	Examples of crystallographic structural models	108
4-III	General remarks	125
	References	127
CHAPTER 5	EPITAXIAL GROWTH. THE PROBLEM OF THE INTERFACE	128
5 - I	The general problem of epitaxial growth	128
5 - II	Thermodynamic approach	130
5 - III	Different modes of growth	1.34

CONTENTS

		1	Page
	5-IV	The interface	135
	5 - V	Discontinuous interface	136
	5 - VI	"Monomolecular" interface	140
	5-VII	The "diffuse interface"	144
	5-VIII	Conclusion. The 2D-3D transition	147
		References	148
CHA	PTER 6	EFFECTS OF ADSORPTION ON SOME FUNDAMENTAL SUBSTRATE	
		PROPERTIES	150
	6 - I	Variations in surface potential and work function	150
	6-11	Adsorption and work function of metals	153
	6-111	Experimental studies on single crystal faces of copper	155
	6 - IV	Changes in atomic-scale structure	165
	6-v	Changes in surface energy (work)	166
	6 - VI	Effects of adsorption on surface self-diffusion	173
		References	176
CHA	PTER 7	ADSORPTION-DESORPTION KINETICS AND CATALYSIS ON SINGLE	
		CRYSTALS	177
	7-I	Introduction	177
	7-11	Adsorption kinetics	177
	7-111	Thermal desorption	183
	7-IV	Catalysis on single crystals	193
		References	209
	5	TURNING OF ADGODOTAN ON THE PURPOSITE AND DODOTATES	011
СНА	PTER 8	INFLUENCE OF ADSORPTION ON ELECTROCHEMICAL PROPERTIES	211
	8 - I	Introduction	211
	8-11	Adsorption of non-metals on noble metal substrates	216
	8-111	Adsorption of metals on metal substrates	219
	8 - IV	Influence of sulphur and oxygen previously adsorbed in the	
		the gas phase on the electrochemical behaviour of metals and	
		alloys	223
	8-v	Conclusion	241
		REFERENCES	242
СНА	PTER 9	COMPOSITION OF GRAIN BOUNDARIES IN BINARY ALLOYS	245
CILA	9-I	Measurement of the composition of grain boundaries	247
	9-11	Grain boundary segregation as an adsorption phenomenon	251
	152	Grain boundary enrichment in binary systems	252
	9-III	Grain boundary enticiment in binary systems	- 16

		CONTENTS	Page
	9-IV	Grain boundary monolayer segregation isotherms	254
	9 - V	Multilayer interfacial segregation	263
	9 -V I	Segregation in multi-component systems	265
	9-VII	Radioactive tracers as a tool for studying segregation	266
		References	269
CHAP'	TER 10	THE INFLUENCE OF CHEMISORPTION ON ADHESION AND FRICTION	271
	10-I	Contact between metallic surfaces	271
	10 - II	Adhesion on metallic surfaces	274
	10-III	Friction	302
	10-IV	Conclusions	328
		References	328
TMDE	NDEY		