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1.3 Equilibria for gas-solid reactions; 1.4 Kinetics of gas-exchange reactions; 1.5 Kinetics of gas-solid reactions; 1.6 Phase stabilities in the Fe-N, Fe-C and Fe-C-N systems; References; 2 Kinetics of thermochemical surface treatments; 2.1 Introduction  
 2.2 Development of an interstitial solid solution  
 2.3 Precipitation of second phase particles in a supersaturated matrix; 2.4 Product-layer growth at the surface; 2.5 Conclusion; References; 3 Process technologies for thermochemical surface engineering; 3.1 Introduction; 3.2 Different ways of achieving a hardened wear-resistant surface; 3.3 Furnaces; 3.4 Gaseous carburising; 3.5 Gaseous carbonitriding; 3.6 Gaseous nitriding and nitrocarburising; 3.7 Variants of gaseous nitriding and nitrocarburising; 3.8 Gaseous boriding; 3.9 Plasma assisted processes: plasma (ion) carburising  
 3.10 Plasma (ion) nitriding/nitrocarburising  
 3.11 Implantation processes (nitriding); 3.12 Salt bath processes (nitrocarburising); 3.13 Laser assisted nitriding; 3.14 Fluidised bed nitriding; Acknowledgements; References; Part Two Improved materials performance; 4 Fatigue resistance of carburized and nitrided steels; 4.1 Introduction; 4.2 The concept of local fatigue resistance; 4.3 Statistical analysis of fatigue resistance; 4.4 Fatigue behavior of carburized microstructures; 4.5 Fatigue behavior of nitrided and nitrocarburized microstructures; 4.6 Conclusion; References  
 5 Tribological behaviour of thermochemically surface engineered steels  
 5.1 Introduction; 5.2 Contact types; 5.3 Wear mechanisms; 5.4 Conclusions; References; 6 Corrosion behaviour of nitrided, nitrocarburised and carburised steels; 6.1 Introduction; 6.2 Corrosion behaviour of nitrided and nitrocarburised unalloyed and low alloyed steels: introduction; 6.3 Nitriding processes and corrosion behaviour; 6.4 Structure and composition of compound layers and corrosion behaviour; 6.5 Post-oxidation and corrosion behaviour; 6.6 Passivation of nitride layers; 6.7 Corrosion behaviour in molten metals  
 6.8 Corrosion behaviour of nitrided, nitrocarburised and carburised stainless steels: introduction  
 6.9 Austenitic-ferritic and austenitic steels: corrosion in chloride-free solutions; 6.10 Austenitic-ferritic and austenitic steels: corrosion in chloride-containing solutions; 6.11 Ferritic, martensitic and precipitation hardening stainless steels; 6.12 Conclusion; References; Part Three Nitriding, nitrocarburizing and carburizing; 7 Nitriding of binary and ternary iron-based alloys; 7.1 Introduction; 7.2 Strong, intermediate and weak Me-N interaction  
 7.3 Microstructural development of the compound layer in the presence of alloying elements

## Sommario/riassunto

Thermochemical surface engineering significantly improves the properties of steels. Edited by two of the world's leading authorities, this important book summarises the range of techniques and their applications. It covers nitriding, nitrocarburizing and carburizing. There are also chapters on low temperature techniques as well as boriding, sheradizing, aluminizing, chromizing, thermo-reactive deposition and diffusion. Reviews the fundamentals of surface treatments and current performance of improved materials  
 Covers nitriding, nitrocarburizing and carburizing of iron and iron carbon alloys  
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