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	Adhesion; 2.3.2.2 Wear Resistance; 2.3.2.3 Fatigue Strength; 2.4 Applications; 2.4.1 Application Limitations; 2.5 Outlook; References; 3 Fundamentals of Thin-film Technology 3.1 Introduction3.2 Classification of Thin-film Coating Processes; 3.3 General Aspects of Gas-phase Coating Processes; 3.3.1 PVD - Physical Vapour Deposition; 3.3.1.1 Evaporation; 3.3.1.2 Sputtering; 3.3.1.3 Ion Plating; 3.3.2 CVD - Chemical Vapour Deposition; 3.4 Plasma Properties; 3.4.1 Low-pressure Plasma; 3.5 Coating Configuration; 3.5.1 Coating Structure; 3.6 Electrodeposition and Electroless Plating Processes; 3.6.1 Introduction; 3.6.2 Fundamental Terms; 3.6.2.1 Electrolyte; 3.6.2.2 Electrodes, Electrode Reactions, Electrode Potential; 3.6.2.3 Electrolysis and Faraday's Laws 3.6.2.4 Overpotential3.6.3 Electroless Plating; 3.6.4 Electrodeposition of Metal; 3.6.5 Electrodeposition of Metal from Non-aqueous Solvents; 3.6.6 Summary and Outlook; References; 4 Innovations in PVD Technology for High-performance Applications; 4.1 Introduction; 4.2 Market Situation; 4.3 Application Examples; 4.3.1 Tool Coatings for Cutting; 4.3.2 Tool Coatings for Forming; 4.3.3 Coatings for Plastic Parts; 4.3.4 Coatings for Machine Elements; 4.3.5 Part Coating for High-temperature Applications; 4.4 Summary; References; 5 Development and Status Quo of Thermal CVD Hard-material Coating 5.1 Introduction5.2 Early CVD Hard-material Coating; 5.3 Fundamentals of Deposition Processes; 5.3.1 Chemical Mechanism; 5.3.2 Interdisciplinary Fundamentals; 5.3.3 CVD System and Reaction- chamber Techniques; 5.4 Combination Coating; 5.5 Material and Coating Properties; 5.5.1 Physical Properties of Coating Materials; 5.5.2 Comparison of Coating Combinations; 5.5.2.1 Classic TiC-TiN; 5.5.2.2 Balanced TiN-TiC; 5.5.3 Effects of Thermal Expansion; 5.5.4 Effects of Hardness; 5.6 Performance of Hard-material Coatings - Applications; 5.6.1 Wear Resistance 5.6.2 Heat Treatment and Dimensional Accuracy
Sommario/riassunto	This translation of a successful German title provides a broad and fundamental overview of current coating technology. Edited by experts from one of the largest research centers for this field in Germany, this valuable reference combines research and industrial perspectives, treated by authors from academia and industry alike. They discuss the potential of the many innovations introduced into industrial application in recent years, allowing materials scientists and engineers to find the appropriate solution for their own specific coating problems. Thus, with the aid of this book, it is possibl