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5.1 Pressure effects on chemical equilibria; 5.2 Pressure effects on reaction rates; 5.3 Environmental effects at high pressure; 5.4 Effects of high pressure on the electronic structure; 6. Chemical Reactions in Molecular Crystals; 6.1 Reversible reactions; 6.1.1 Solid nitrogen at high pressure: the archetypal energetic material; 6.1.2 Red oxygen; 6.1.3 Carbon dioxide: a multiform solid; 6.1.4 Formic acid; 6.1.5 Sulphur. Polymeric and molecular phases; 6.1.6 Symmetry breaking and ionization at high pressures; 6.1.7 Metallization at high pressures; 6.2 Irreversible reactions
6.2.1 Unsaturated hydrocarbons; 6.2.2 Aromatics and heteroaromatics; 6.2.3 Miscellanea; 6.2.4 Energetic materials; 6.2.5 Photochemistry at high pressures; Bibliography; Appendix A; Index

Sommario/riassunto

High-pressure materials research has been revolutionized in the past few years due to technological breakthroughs in the diamond anvil cell (DAC), shock wave compression and molecular dynamic simulation (MD) methods. The application of high pressure, especially together with high temperature, has revealed exciting modifications of physical and chemical properties even in the simplest molecular materials. Besides the fundamental importance of these studies to understand the composition and the dynamics of earth and planets' interior, new materials possessing peculiar characteristics of hardness
