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Autore	Sato Norio
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	 4.3. The average heat of reaction4.4. The average affinity of reaction; CHAPTER 5. CHEMICAL POTENTIAL; 5.1. Thermodynamic potentials in open systems; 5.2. The partial molar quantity of energy and the chemical potential; 5.3. Chemical potentials and the affinity of reaction; 5.4. Chemical potentials and thermodynamic energy functions; 5.5. Chemical potentials in homogeneous mixtures: the Gibbs-Duhem equation; 5.6. Chemical potentials of substances in ideal mixtures; 5.7. Activity and activity coefficient; 5.8. Chemical potentials of pure substances 5.9. Thermodynamic potentials in ideal mixtures5.10. The unitary and mixing terms of thermodynamic potentials; CHAPTER 6. UNITARY AFFINITY AND EQUILIBRIUM; 6.1. Affinity and equilibrium in chemical reactions; 6.2. The unitary affinity; 6.3. Equilibrium constants and concentration units; 6.4. Equilibrium constants as a function of pressure and temperature; CHAPTER 7. GASES, LIQUIDS, AND SOLIDS; 7.1. Perfect and ideal gases; 7.2. Non-ideal gases; 7.3. Liquids and solids; 7.4. The state equation and thermodynamic functions of condensed substances; CHAPTER 8. SOLUTIONS 8.1. Ideal and non-ideal solutions8.2. Perfect solutions and ideal solutions; 8.3. Reference systems for thermodynamic unitary quantity; 8.4. Thermodynamic excess functions in non-ideal solutions; 8.5. Units of the concentration; 8.6. Osmotic pressure; 8.7. Electrolytic solutions; CHAPTER 9. ELECTROCHEMICAL ENERGY; 9.1. Electrochemical potential of charged particles; 9.2. Transfer of charged particles between two condensed phases; 9.3. Electrode and electrode potential; 9.4. Electrochemical cells; 9.5. Equilibrium electrode potential; 9.4. Electrochemical cells; 9.5. Equilibrium electrode potential; 9.4.
Sommaria/riassunta	9.6. Equilibrium electrode potential of ionic transfer reactions
Sommano/nassunto	engineers. In the textbook efforts have been made to visualize as clearly as possible the main concepts of thermodynamic quantities such as enthalpy and entropy, thus making them more perceivable. Furthermore, intricate formulae in thermodynamics have been discussed as functionally unified sets of formulae to understand their meaning rather than to mathematically derive them in detail. In this textbook, the affinity of irreversible processes, defined by the second law of thermodynamics, has been treated as the main