

(適用 97 年入學者)博士班資格考分組考試科目及參考用書或範圍

(2008/06/03)

**輻射度量**

Glenn F. Knoll, "Radiation Detection and Measurement," third edition, John Wiley & Sons, Inc., Ch. 1-15

**核工原理**

J. Lamarsh and A. Baratta, "Introduction to Nuclear Engineering", 3rd edition, Ch. 1-7.

**熱流學**

Frank P. Incropera, David P. DeWitt, "Fundamental of Heat and Mass Transfer," John Wiley & Sons.

**流體力學**

Munson, "Fundamentals of Fluid Mechanics", Ch. 1-9

**工程熱力學**

Michael. J. Moran, Howard. N. Shapiro, "Fundamentals of Engineering Thermodynamics", 6 th Edition, John Wiley & Sons, Inc. Ch. 1-13.

**電路分析(電路學)**

C.K. Alexander and M. N. O. Sadiku,"Fundamentals of Electric Circuits", Concise Edition, Ch. 1-10, Ch. 13 except. 13.6 and .7, Ch. 14

**電子元件**

Sedra/Smith, "Microelectronic Circuits", Oxford, 5th Ed, Ch. 1-5, (即電子 1).

**電子系統**

Sedra/Smith, "Microelectronic Circuits", Oxford, 5th Ed, Ch. 6-14, (即電子 2 和電子 3).

**材料熱力學**

- (1) The First Law of Thermodynamics
- (2) The Second Law of Thermodynamics
- (3) Auxiliary Functions
- (4) Heat Capacity, Enthalpy, Entropy, and The Third Law of Thermodynamics
- (5) The Behavior of Gas
- (6) Phase Equilibria in a One-Component System

- (7) The Behavior of Solutions
- (8) Gibbs Free Energy - Composition and Phase Diagrams of Binary Systems
- (9) Chemical Reactions (gas-gas and gas-condensed phase reactions)

參考書：

D.R. Gaskell, Introduction to The Thermodynamics of Materials, 4th ed., Ch. 1-12, McGraw-Hill, 2004.

### 物理冶金(含高等物理冶金)

物理冶金

- (1) Crystal Structure of Metals
- (2) Defects in Crystals
- (3) Substitutional and Interstitial Diffusion
- (4) Phase Diagrams
- (5) Deformation of Metals
- (6) Annealing
- (7) Nucleation and Growth
- (8) Solidification
- (9) Nonferrous Alloys Al, Cu, Ti
- (10) Ferrous Alloys (steel)
- (11) Fracture, Creep and Fatigue

高等物理冶金

- (1) Crystal Interface and Microstructure
- (2) Theory of Nucleation and Growth
- (3) Diffusional Transformations in Solids
- (4) Diffusionless Transformation

參考書：

物理冶金

R.E. Reed-Hill and R. Abbaschian, Physical Metallurgy Principles, 3rd ed., PWS-KENT, 1992.

高等物理冶金

D.A. Porter and K.E. Easterling, Phase Transformations in Metals and Alloys, 2nd ed., Chapman & Hall, 1993.

### 奈米科技導論 (TIGP)

## 計算材料科學 (TIGP)

### 固態物理導論

C. Kittel, Introduction to Solid State Physics, (7th or 8th ed.), Ch. 1-9

### 半導體元件物理

(1) Semiconductor Devices: Physics and Technology, 2nd Edition by Simon M. Sze Ch1~Ch6

(2) Semiconductor Physics and Devices, 3rd ed. by Donald Neamen, Ch1~Ch12

### 電磁學

D. Griffith, Introduction to Electrodynamics, 3rd ed.

### 電漿物理

Dwight R. Nicholson, Introduction to Plasma Theory.

### 電漿工程

(1) B. Chapman, "Glow Discharge Processes, sputtering and plasma etching", John Wiley & Sons, New York, 1980.

(2) M. A. Liberman and A. J. Lichtenberg, "Principles of Plasma Discharges and Materials Processing", John Wiley & Sons, New York, 1994. Ch. 10 - Particle and Energy Balance in Discharges, Ch. 12 - Inductive Discharges, Ch. 13, Section 1 - ECR discharges

### 近代物理

(1) Arthur Beiser, Concepts of Modern Physics, 6th ed., McGraw Hill, 2003. Ch. 1-7

(2) R. A. Serway, C. J. Moses, C. A. Moyer, Modern Physics, 3rd edition, Saunders College Publishing, 2005, Ch. 1-9

### 物理化學

### 奈微米系統工程原理

### 量子力學

### 電化學原理