Satuan Acara Pengajaran

ENMT801001 - Kinetika & Transformasi Fasa

Pengajar
Dr. Deni Ferdian S.T., M.Sc.
Dr. Ir. Sotya Astutiningsih M.Eng

Minggu 1

Materi	Introduction (Rules, Grading, Marking) 1. Review on Thermodynamics and Phase Equilibrium: a. Single Component System b. Binary Component System c. The Phase Rule d. Binary Phase Diagrams: - Two phase equilibrium - Three phase equilibrium - Exercise on two phase and three phase equilibrium - Reactions in the solid state
Media	LCD Projector
Referensi	1. Porter, D. A and Easterling, K.E, Phase Transformation in Metals and Alloys, 2nd. ed., CRC Press, 2003. 2. Prince, A, Multicomponent Alloy Constitutional Bibliography, The Metals Society, London, 1978 3. West, DRF, Ternary Equilibrium Diagrams, Chapman and Hall, 1982 4. M. Fleming, Solidification Processing, 1974 5. Campbell, Phase Diagram Understanding the basic, ASM, 2012 Support materials: 1. Chapter 5, 9 and 10 of: Callister, W.D, Materials Science and Engineering: An Introduction, 6th ed., Wiley., 2004 2. Lennart Backerud, Guocai Chai, and Jarmo Tamminen, Solidification Characteristics of Aluminum Alloys-Volume 2: Foundry Alloy 3. Lars Arnberg, Lennart Backerud,and Guocai Cahi, Solidification Characteristics of Aluminum Alloys-Volume 3: Dendrite Coherency

Aktivitas	

Minggu 2

Materi	e. Fe-Fe3C Phase Diagram f. Ternary System Representation g. Ternary System containing 2 phase h. Exercise
Media	LCD Projector
Referensi	
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Minggu 3

Materi	Diffusion in Materials: a. Atomic mechanism of diffusion b. Fick's first law for steady state diffusion c. Interstitial diffusion d. Substitutional diffusion
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Minggu 4

Materi	Diffusion in Materials (cont..): d. Tracer diffusion in binary alloys e. Diffusion in multiphase binary system f. Journal review
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Referensi	
Aktivitas	

Minggu 6

Materi	Crystal Interface and Microstructure (1) a. Interfacial free energy b. Grain boundary c. Case study in Crystal Interface
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Minggu 7

Materi	Crystal Interface and Microstructure (2) d. Interphase interfaces in solids e. Interface migration
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Minggu 8

Materi	Midterm
Media	
Referensi	
Aktivitas	

Minggu 9

Materi	Solidification (1) a. Nucleation in pure metals b. Growth of pure solid c. Solidification of alloy
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Referensi	

Aktivitas	

Minggu 10

Materi	Solidification (2) d. Application of solidification theory in casting and welding e. Solidification during quenching from the melts f. Case study
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Referensi	
Aktivitas	