Háskóli Íslands
Verkfræðideild
Rafmagns- og tölvuverkfræðiskor

Haust 2001

08.33.40 Hlutjónað rafgas

Kennsla:	Jón Tómas Guðmundsson, tumi@hi.is
Kennslubók:	M. A. Lieberman and A. J. Lichtenberg, *Principles of Plasma Discharges and Materials Processing*, John Wiley & Sons, 1994
Heimasíða:	www.raunvis.hi.is/~tumi/rafgas01.html
Fyrirlestrar:	Þrisvar í viku
	Mánudagar 9:30 – 10:45
	Miðvikudagar 11:00 – 12:15
	Föstudagar 9:30 – 10:45
Heimadæmi:	Verða sett fyrir vikulega.
	Athuga ber að þau gilda 50 % af lokaeinkunn.
Einkunnargjöf:	Heimadæmi 50 %
	Lokapróf 50 %

Dagur	Viðfangsefni	Lesefni
	1. Introduction	
27. ágúst	Materials processing	1.1
29. ágúst	Plasma and sheaths, discharges symbols and units	1.2 – 1.4
	2. Basic plasma equations and equilibrium	
31. ágúst	Introduction, field equations, current and voltage	2.1 – 2.2
3. september	Conservation equations	2.3
5. september	Equilibrium properties	2.4
	3. Atomic collisions	
7. september	Basic concepts, collision dynamics	3.1 – 3.2
10. september	Elastic scattering	3.3
12. september	Inelastic collisions, average over distributions, surface effects	3.4 – 3.5
	4. Plasma dynamics	
14. september	Basic motions	4.1
17. september	Nonmagnetized plasma dynamics	4.2
	5. Diffusion and transport	
19. september	Basic relations	5.1
21. september	Diffusion solutions	5.2
24. september	Low pressure solutions	5.3
	6. DC sheaths	
26. september	Basic concept and equations, Bohm sheath criterion	6.1 – 6.2
28. september	High voltage sheath	6.3
1. october	Electronegative sheaths, collisional sheath	6.4 – 6.5
3. october	Electrostatic probe diagnostics	6.6

Dagur	Viðfangsefni	Lesefni
	7. Chemical reactions and equilibrium	
5. october	Introduction, energy and enthalphy, entropy and Gibbs free energy	7.1 – 7.3
8. october	Chemical equilibrium	7.4
10. october	Heterogeneous equilibrium	7.5
	8. Molecular collisions	
12. october	Introduction, molecular structure, electron collisions with molecules	8.1 – 8.3
15. october	Heavy particle collisions, reaction rates and detailed balancing	8.4 – 8.5
23. october	Optical emission and actinometry	8.6
	9. Chemical kinetics and surface processes	
12. november	Elementary reactions	9.1
14. november	Gas phase kinetics	9.2
16. november	Surface processes	9.3
19. november	Surface kinetics	9.4
	10. Particle and energy balance in discharges	
21. november	Introduction, electropositive plasma equilibrium	10.1 – 10.2
23. november	Electronegative discharge equilibrium	10.3
	11. Capacitive discharges	
26. november	Homogenous model	11.1
28. november	Inhomogenous model	11.2
30. november	Asymmetric discharges	11.4, 11.6
	12. Inductive discharges	
3. december	High density low pressure discharges	12.1
5. december	Operating regimes, planar coil configuration	12.2 – 12.3
	13. Wave heated discharges	
7. december	Electron cyclotron resonance discharge	13.1

Dagur	Viðfangsefni	Lesefni
	14. DC discharges	
10. december	Qualitative charectistics of glow discharges	14.1
12. december	Analysis of the positive column	14.2
14. december	Planar magnetron discharges	14.5
	15. Etching	
17. december	Etch requirements and processes	15.1
19. december	Etching kinetics	15.2
21. december	Halogen atom etching of silicon	15.3
	16. Deposition and Implantation	
17. december	Introduction, plasma enhanced chemical vapor deposition	16.1 – 16.2
19. december	Sputter deposition	16.3
21. december	Plasma immersion ion implantation	16.4

Kaflar í töflu miðast við M. A. Lieberman and A. J. Lichtenberg, *Principles of Plasma Discharges and Materials Processing*, John Wiley & Sons, 1994