

Vorlesung: Elektronische und Ionische Leiter
Wintersemester 2009
Andreas Klein (OF) und Christian Melzer (EM)
Donnerstags ~ 13:30

Topics: (1 unit ~ 1.5 hours)

- 15.10. Introduction (CM)
Transport mechanisms, materials, definitions, electronic structure
- 22.10. Metals (CM)
Drude and Sommerfeld model
- 29.10. & 5.11. Semiconductors (AK)
electronic structure, doping, scattering mechanisms, Grain boundaries,
Varistor, PTCR
- 12.11. Discussion (CM + AK)
- 19 & 26.11. Amorphous and molecular Semiconductors (CM)
electronic structure, relaxation phenomena, disorder, mobility gap, polarons,
hopping transport
- 3.12. Discussion (CM + AK)
- 10 & 17.12. Oxides (AK)
Point defects, diffusion, ionic conductivity, electrically conducting oxides,
polarons, photorefractive effect
- 14.1. insulators (CM)
breakdown, Poole-Frenkel, tunneling
- 21.1. Electrodes (AK)
contact formation, carrier injection
- 28.1 & 4.2. measurement techniques (CM + AK)
d.c. & a.c. conductivity, IV, CV, TOF, Hall-effect, conductivity relaxation,
Seebeck, FET, impedance
- 11.2. Discussion (CM + AK)