



Transport of matter and charge in solids

Visiting professor: Prof. Ilan Riess (Tecnion-IIT, Haifa, Israel)

Course description:

Transport of matter and charge in solids depends on point defects in the solid and on driving forces determined by a combination of a voltage difference applied to the electrodes and a chemical difference of the chemical activity of the electrodes. With this in mind one can analyze the properties of solid state devices based on mixed-ionic-electronic-conductors (MIECs) which are introduced at the beginning of the course.

Syllabus of the lecture subjects (enlisted):

1. Introduction: key applications of solid state devices based on MIECs.
2. Point defects in solids, their contribution to the properties of solids and ways to generate them.
3. Equilibrium properties, equilibrium conditions, reactions under equilibrium, stoichiometry changes.
4. Electron and ion currents in solids. The current density equation, boundary conditions.
5. Understanding the applications presented in the introduction.

TERMINY ZAJĘĆ			
Data	Dzień tyg.	Godz.	Sala
2015-05-11	poniedziałek	9.00-11.00	2/07 (Centrum Nanotechnologii)
2015-05-12	wtorek	9.00-11.00	2/07 (Centrum Nanotechnologii)
2015-05-13	środa	9.00-11.00	2/07 (Centrum Nanotechnologii)
2015-05-14	czwartek	9.00-11.00	2/07 (Centrum Nanotechnologii)
2015-05-15	piątek	9.00-11.00	2/07 (Centrum Nanotechnologii)
2015-05-18	poniedziałek	9.00-11.00	2/07 (Centrum Nanotechnologii)
2015-05-19	wtorek	9.00-12.00	2/07 (Centrum Nanotechnologii)