



Dielectric materials properties, measurements, and applications.

Lecturer: dr hab. inż. Ryszard Jan Barczyński (WFTiMS)

Course description:

1. Introduction the macroscopic description of dielectrics.
- 2, 3. Microscopic view a simple description of the mechanisms of dielectric polarization:
 - a) electronic; b) ionic; c) orientation polarization; d) interface and space charge polarization.
4. Description of dielectrics in the time domain and in the frequency domain.
5. Dielectric relaxation.
6. Dielectric losses, origin and practical significance.
7. Causality and the Kramers–Kronig relations.
8. Breakdown in dielectric materials processes and a significance for the technology.
- 9, 10. Special dielectric materials properties, structure and applications.
 - a) piezoelectrics; b) pyroelectrics; c) ferroelectrics.
11. Capacitors – their construction, parameters, and applications.
12. Measurements of dielectric properties of materials – the technique and experimental methods of impedance spectroscopy.
13. Measurements of dielectric properties of materials the practical description and analysis of impedance data.
14. Electromagnetic waves in a lossy dielectric medium.
15. Colloquium, summary.

TERMINY WYKŁADÓW			
Data	Dzień tygodnia	Godzina	Sala
13.03.2012	Wtorek	12-13.30	06 ETI
20.03.2012	Wtorek	12-13.30	06 ETI
27.03.2012	Wtorek	12-13.30	06 ETI
03.04.2012	Wtorek	12-13.30	06 ETI
17.04.2012	Wtorek	12-13.30	06 ETI
24.04.2012	Wtorek	12-13.30	06 ETI
08.05.2012	Wtorek	12-13.30	06 ETI
15.05.2012	Wtorek	12-12.45	06 ETI