



## СЕРИЈА СЕМИНАРА НА ФИЗИЧКОМ ФАКУЛТЕТУ

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### Experimental Methods for Modern Materials

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Scope of the seminar course is the presentation and discussion of some main experimental techniques currently used for the characterisation of modern materials (nanowires, nanostructured 2D materials etc.) as well as the basic physical background for each of the characterisation techniques.

The seminar course will first address fundamental concepts of electron and phonon physics as well as give insight into some basic spin-related phenomena. In course of this the density of states and temperature-dependence of specific heat of materials of different dimensionality, the temperature-dependence of scattering cross-sections (electron-defect, phonon-defect, electron-phonon, spin etc.), and electrical and thermal transport mechanisms will be discussed as relevant for the characterisation techniques. Within this framework, the basic operation of a few characterisation techniques comprising scanning- and transmission-electron microscopy, Raman scattering, scanning-force microscopy (STM and AFM), electronic transport in general as well as shortly the generation of low temperatures will be discussed including technological aspects and limits of each of these approaches.

Target audience: B.Sc. higher semesters and M.Sc. students