Přednáška **12.6.2008** ve 14:00
na Přírodovědecké fakultě UJEP v Ústí nad Labem,
místnost č. 502, hlavní budova nejvyšší patro PřF, České mládeže 8, Ústí n. L.
Jak se dostat na PřF lze najít na: http://sci.ujep.cz/ -> Základní informace -> Sídlo a kontakt

Time-of-Flight Secondary Mass Spectrometry (TOF-SIMS): Principle and Applications

Markus Terhorst
ION-TOF GmbH, Heisenbergstr. 15, 48149 Münster, Germany

Time-of-Flight Secondary Ion Mass Spectrometry (TOF-SIMS) is a surface analytical technique providing detailed information about the chemical composition of the top surface layers of a solid. In a TOF-SIMS analysis, the sample is bombarded with a pulsed primary ion beam. Both atomic and molecular ions are emitted from the outer layers of the surface and extracted into the mass spectrometer. The lighter ions arrive before the heavier ones and by measuring the flight time for each ion a mass spectrum is recorded. This cycle is repeated at kHz repetition rate to generate a complete spectrum of high dynamic range. Based on this principle, TOF-SIMS provides parallel detection of all ions with high mass range, high mass resolution, high lateral resolution and high sensitivity. Depending on the analytical task and the experimental set-up, modern TOF-SIMS instruments can be applied in various operational modes in order to emphasise on the one or the other kind of information. These modes include surface spectroscopy, surface imaging, depth profiling and 3D analysis. Due to this versatility, TOF-SIMS is successfully applied in a large variety of industrial and research areas such as semiconductors, polymers, paint, coatings, glass, paper, metals, ceramics, pharmaceutical, bio-materials, and more. The principles, possibilities and limitations of the technique will be discussed along several examples of application.

Jan Lorinčík, UJEP Ústí nad Labem, ÚFE AV ČR v.v.i., lorincik@ufe.cz