Ion Beam modification and analysis of materials (2 CFU)

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lecture period: march 2020

PROGRAMME OF THE COURSE

Ion beam modification: doping in semiconductors by ion implantation, defect generation in crystalline materials, energy loss mechanism, collision cascade, damage accumulation, temperature effects; radiation enhanced diffusion; damage recovery; point and extended defects clusters; TRIM software; amorphization experiment in laboratory.
Ion beam analysis: Rutherford Backscattering spectrometry; collision kinematics; scattering cross section; energy loss; spectra acquisition in laboratory and analysis with RUMP and/or SimNRA software.
The final examination will consist of a discussion on some of the above issues or a presentation with discussion of data acquired in labs.

BIBLIOGRAPHY

- L. Feldman, J. Mayer "Fundamentals of Surface and Thin Film Analysis" North-Holland Ed.
- K.-N. Tu, J. W. Mayer, L. C. Feldman, "Electronic Thin Film Science" Macmillan Publishing Company
- E. Rimini, "Ion Implantation: Basics to Device Fabrication", Springer