

Optical properties of binary and ternary chalcogenides

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Development of memories based on novel chalcogenide materials are among the research directions of many research units aiming discovery of new or improved optical or electric storage media.

One of the most important and fast noninvasive and nondestructive tool to test, to control and to have an immediate feed-back response in case of in-situ analysis, is spectroscopic ellipsometry. This technique is highly accurate in measuring, while realistic models are required for the systems under consideration, since the analysis of the results are often complicated and based on optical models.

In this work, we will present and discuss the optical properties of phase change materials in the form of thin films [1-3] and multilayers [3-5] obtained by pulsed laser deposition or magnetron sputtering. The results are correlated with deposition conditions as well as with the outputs using other techniques such as X-ray diffraction and electrical measurements.

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References

- [1] AC Galca *et al.*, Structural and optical properties of optimized amorphous GeTe films for memory applications, *J. Non-Cryst. Solids* 499 (2018) 1.
- [2] A Velea *et al.*, In-situ characterization of the optical and electronic properties in GeTe and GaSb thin films, *J. Appl. Phys.* 118 (2015) 135712.
- [3] F. Sava *et al.*, Thermal Stress Effect on the Structure and Properties of Single and Double Stacked Films of GeTe and SnSe, *Phys. Status Solidi B-Basic Solid State Phys.* 255 (2018) 1700552.
- [4] F. Sava *et al.*, Structural characterisation and thermal stability of SnSe\GaSb stacked films, *Philos. Mag.* 99 (2019) 55.
- [5] A. Velea *et al.*, In-situ crystallization of GeTe\GaSb phase change memory stacked films, *J. Appl. Phys.* 116 (2014) 234306.