

VII Leopoldo García-Colín Mexican Meeting on Mathematical and Experimental Physics



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LINDA GARCÍA: Femtosecond laser-induced crystallization in Antimony Sulphide thin films (Sb₂S₃).

Monday, 17 February 2020 19:00 (30 minutes)

In recent years, the use of thin films of metal chalcogenides has been increased in photovoltaic solar technology. Mainly, semiconductor materials such as Antimony Sulphide (Sb₂S₃) are used due to their high absorption coefficient and band gap (1.7-2.5 eV). However, Sb₂S₃ thin films obtained by chemical bath, the most common method of manufacturing them, have an absence of crystallinity, making it necessary to use post-deposit or in situ treatments to improve their crystalline properties, important for the performance of the photovoltaic device. The main objective of this work is to promote, by laser irradiation with ultrashort pulses, the crystallization of thin films of Sb₂S₃ obtained by a chemical bath. The laser irradiation will be carried out by using femtosecond laser pulses (1030 nm, 250 fs, 2 MHz), varying the irradiation parameters such as fluence, repetition rate, and scanning speed. Also, the characterization of Sb₂S₃ films is contemplated, before and after laser irradiation. Therefore, it will be determined changes in the structure (X-Ray Diffraction); the thickness of the films (Reflection and Transmission Spectroscopy); the molecular structure (Raman Spectroscopy); its elementary composition (XPS); morphology of the films and their roughness (AFM); optical properties (UV-Vis-NIR Spectroscopy); and, electrical and photoconductivity measurements of the films.

Session Classification: SHORT TALKS

Track Classification: SYMPOSIUM ON LASER ABLATION