

International Conference on
NANOMEDICINE AND NANOTECHNOLOGY
August 20-21, 2018 Rome, Italy

Calculation of different optical constants and its related terms using envelope methods of deposited tantalum oxide

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One of the most widely used oxides in thin film area is tantalum oxide. It has large number of applications in sensing and optical filter applications. The chief reason is its excellent environmental durability, best reproducibility, lower thermal stress as well as tunable refractive index properties. In this paper, tantalum oxide coatings were performed by using electron beam deposition equipment under reactive oxygenated environment and thickness of film was monitored using quartz crystal *in situ* thickness monitoring. The whole study focuses on estimation of film thicknesses and optical constants by envelope method to verify the observation done by *in situ* thickness monitoring. The thickness calculated by this was used for estimating other constants as absorption and extinction coefficients.

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