

Thesis Title	Thickness Measurement of Gold Film Coating on Glass Substrate by X-Ray Fluorescence Technique.
Thesis Credits	12
Candidate	Mr. Nirun Witit-anun
Supervisor	Assoc. Prof. Dr. Pichet Limsuwan
Degree of Study	Master of Science
Department	Physics
Academic Year	1999

ABSTRACT

Film thickness is considered as one of the important characteristics of thin film. Due to most of film properties are related to film thickness such as electrical resistant, reflection of light and transmission of light. The objective of this research work is to study thin film coating technique and measure the thin film's thickness by using X-ray Fluorescence technique. Gold film has been coated on cover glass slide by unbalanced magnetron sputtering system and measured the thickness of film by mass weighting and then analyzed the X-ray fluorescence intensity of Au $L\beta$ from film. The results show that the gold films give very bright color of the gold, smooth surface and high reflective. The thickness of films in this study are 0.0-6.0 μm . The intensity of X-ray fluorescence of Au $L\beta$ from film are related to film thickness in exponential function obeyed the fluorescence equation $I_d = I_s (1 - e^{-\alpha d})$ where I_d is intensity of X-ray fluorescence from film thickness d , I_s is saturated X-ray intensity and α is the geometry factor. The thickness of film from mathematical models gives corrected values in 95%.

Keywords : Thin film / Film thickness measurement / Magnetron sputtering /
Gold film / X-ray fluorescence