Heaven's light is our guide.

Rajshahi University of Engineering and Technology

Department of Electrical & Electronic Engineering

Course no. EEE 4166

Course title: Processing & Fabrication Technology Sessional

Experiment no. 5

Experiment name: Characterization of ZnO thin lim from XRD analysis and UV/Vis spectrophotometer

Date of experiment: July 26, 2023

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Submitted to:	Submitted by:
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Data table 5.1: XRD data for film thickness calculation

Sl. No.	2*Theta	Intensity		Sl. No.	2*Theta	Intensity
1	20	20		101	21.98	14
2	20.02	18		102	22	14
3	20.04	18		103	22.02	22
4	20.06	20		104	22.04	14
5	20.08	12		105	22.06	14
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99	21.94	12		3499	89.98	18
100	21.96	12		3500	90	18

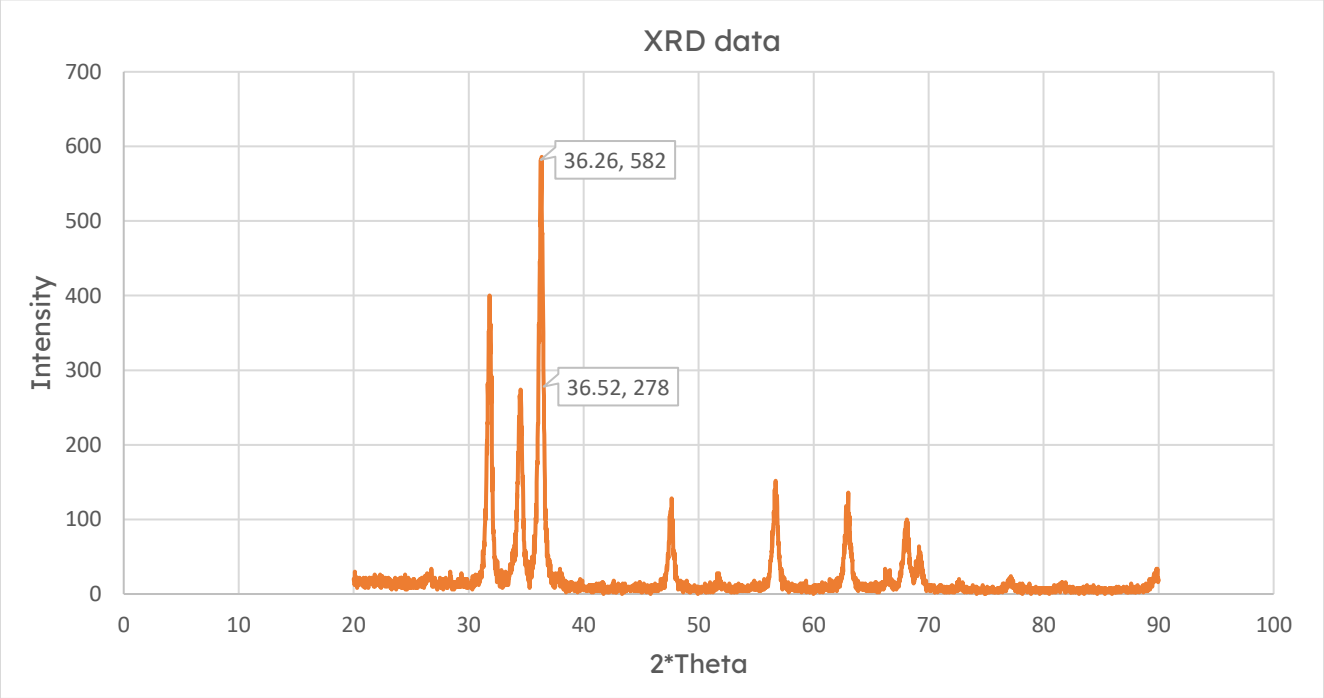

Fig. 5.1: Intensity VS 2*theta graph from XRD data for film thickness analysis

Data table 5.2: UV/Vis data for band gap calculation

wave	%Trans.	Trans.	log term	alpha	hv	(αhv)^.5	(αhv)^2
900	54.51	0.5451	2.263524	5212895	1.377778	2679.964809	13633787.91
899	54.474	0.54474	2.263811	5213556	1.37931	2681.62486	13681068.99
898	52.986	0.52986	2.275839	5241257	1.380846	2690.236112	13799758.72
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894	54.391	0.54391	2.264473	5215081	1.387025	2689.506644	13915972.94
893	54.342	0.54342	2.264864	5215983	1.388578	2691.244672	13965189.03

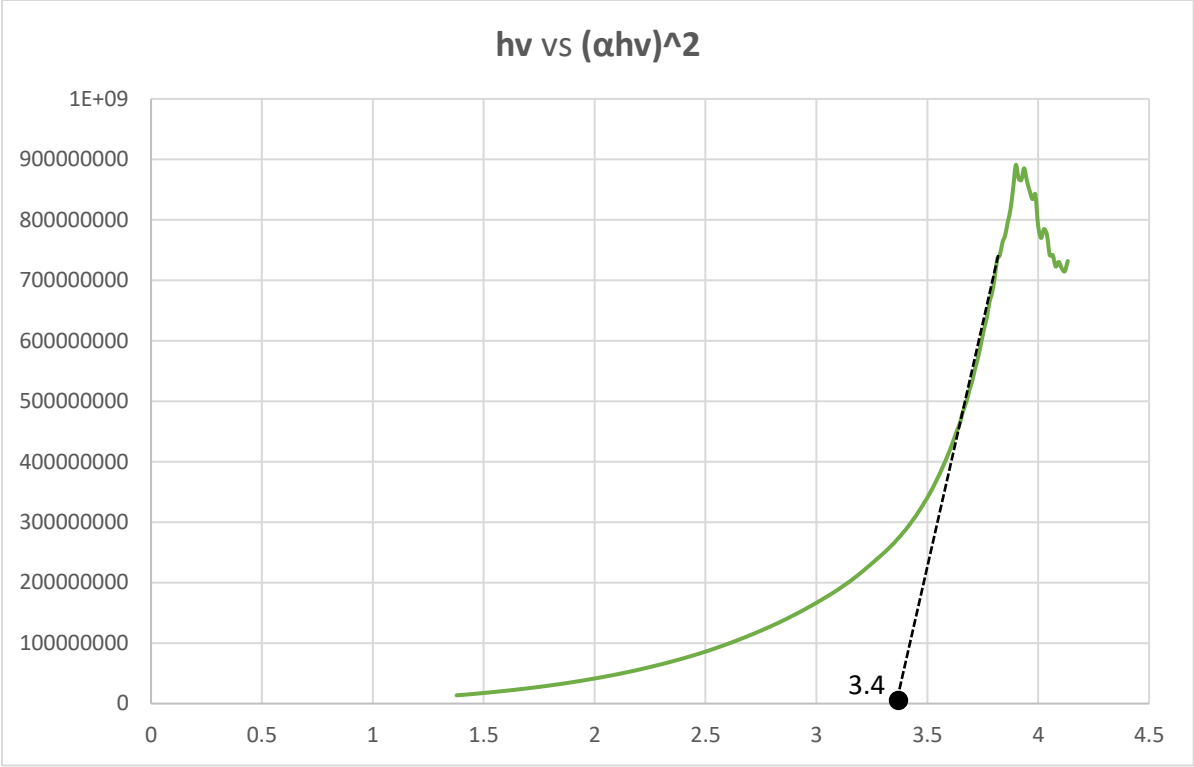

Fig. 5.2: hv vs (αhv)^2 graph from UV/Vis data for direct band gap analysis

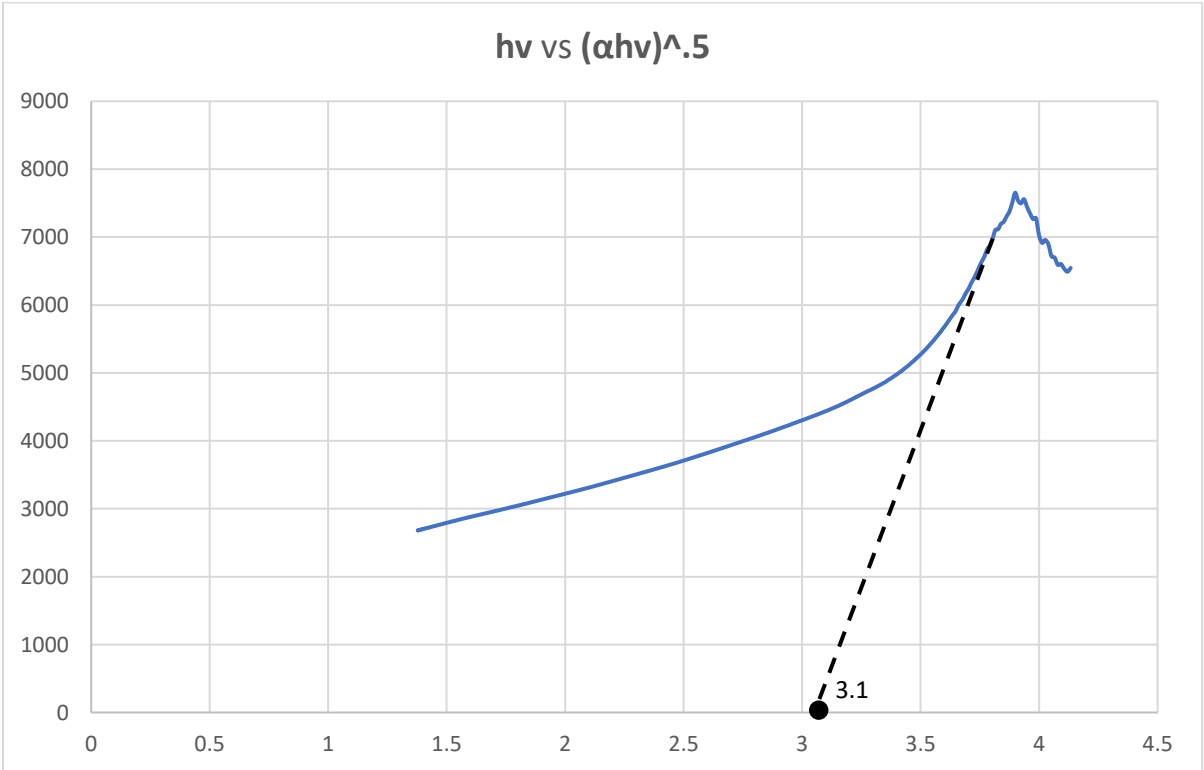

Fig. 5.3: hv vs (αhv)^0.5 graph from UV/Vis data for indirect band gap analysis