

Table S1: Microstructural characteristics of ZnO using different models.

XRD model name		Z1	Z2	Z3	Z4	
Scherrer's equation	D _S =	34.34	84.51	36.69	97.20	
LSLMSE	D _L =	462.17	4621.68	346.63	2773.01	
Williamson–Hall method	UDM	ε =	0.0004	-0.0008	0.0011	-0.0012
		D _W =	39.61	42.02	66.02	43.33
	USDM	σ =	5.2 × 10 ⁷	-1.13 × 10 ⁸	1.48 × 10 ⁸	-1.69 × 10 ⁸
		D _W =	39.61	42.02	66.02	43.33
	UEDM	μ =	4.81	22.45	46.08	51.01
		D _W =	39.61	42.02	66.02	43.33
Size–strain plot	D _W =	35.55	40.78	36.49	47.81	
Halder-Wagner	D _W =	25.64	29.41	26.32	34.48	
Sahadat-Scherrer's model	D _{S-S} =	36.49	138.65	40.78	138.65	
Monshi-Scherrer’s Method	D _{M-S} =	35.37	52.61	46.58	52.76	

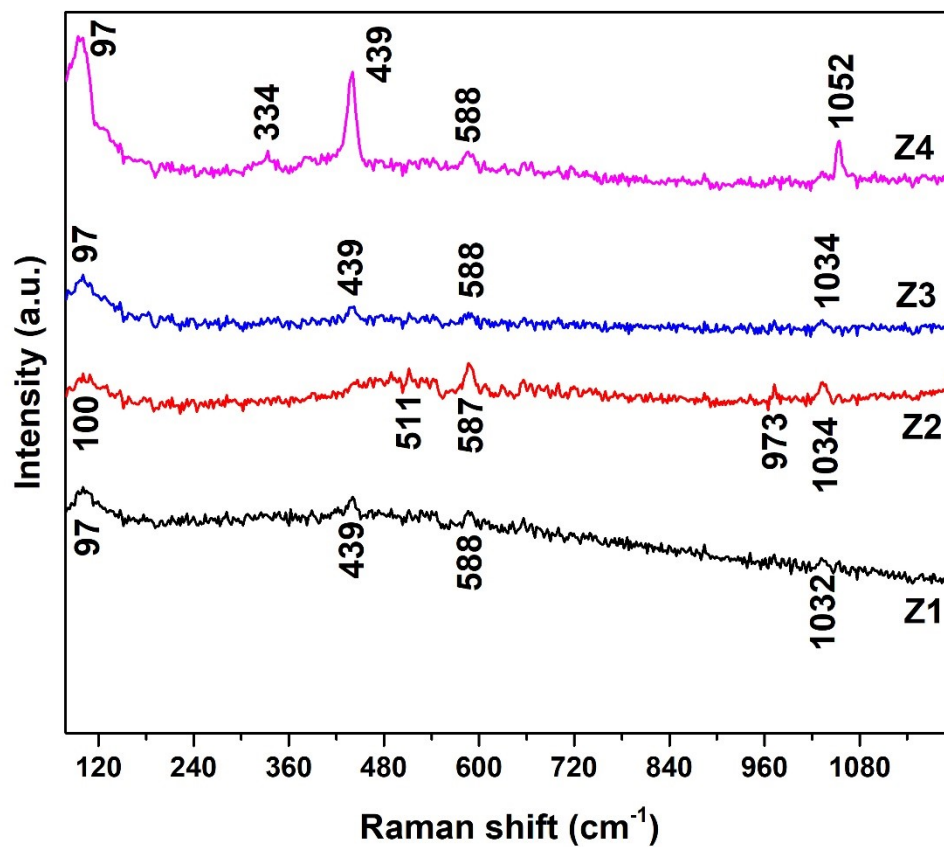


Figure S1: RAMAN spectrum of synthesized ZnO-NPs.