

Supplementary Materials: The Influence of CBD Parameters on the Energy Gap of ZnS Narcissus-Like Nanostructured Thin Films

Mohammed Hussein Khalil ¹, Raghad Y. Mohammed ² and Mohammed Aziz Ibrahem ^{3,*}

Department of Physics, College of Science, University of Duhok, Kurdistan Region 42001, Iraq; mohamadswary@uod.ac (M.H.K.); ssraghad@uod.ac (R.Y.M.)

* Correspondence: m_aziz7951@uod.ac; Tel.: +964-750-458-2358

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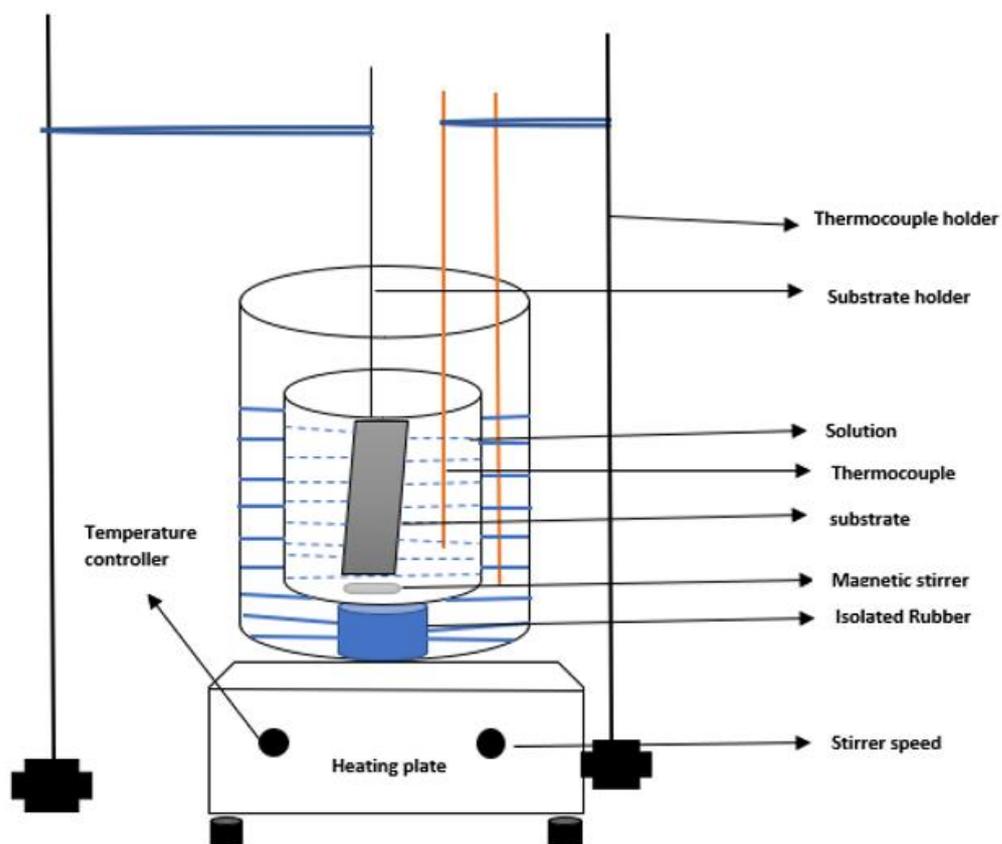


Figure S1. Schematic representation of the CBD system.

Table S1. CBD different deposition parameters. At each deposition, one of the parameters was changed and all others were fixed to get the optimized condition.

| Time(minutes) | pH | Temperature(C) | Zinc acetate(M) | Thiourea(M) |
|---------------|------|----------------|-----------------|-------------|
| 5 | 9 | 40 | 0.05 | 0.05 |
| 10 | 9.5 | 45 | 0.1 | 0.1 |
| 20 | 10 | 55 | 0.15 | 0.15 |
| 30 | 10.5 | 65 | 0.2 | 0.2 |
| 40 | 11 | 75 | 0.25 | 0.25 |
| 50 | 11.5 | - | 0.3 | 0.3 |
| 60 | - | - | - | - |

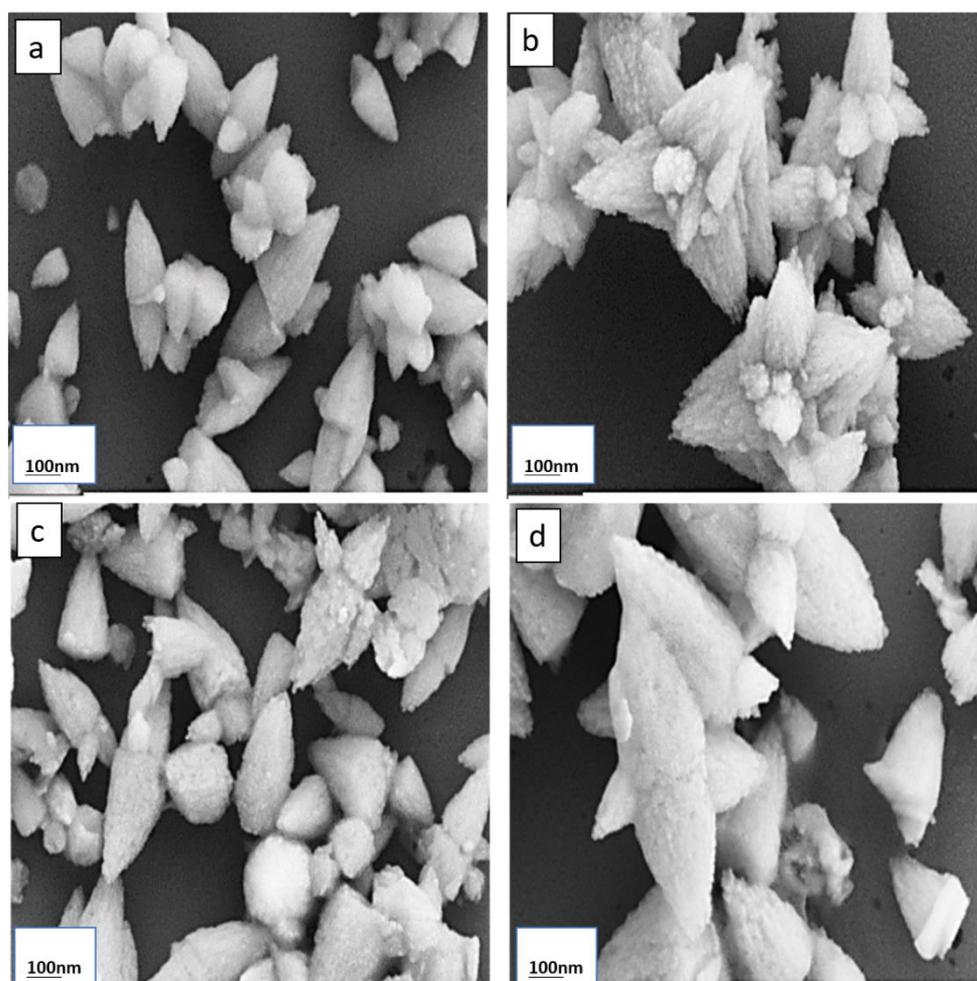


Figure S2. FESEM images of ZnS Narcissus-Like Nanostructure growth with variation in deposition time (a)5 min, (b)10 min, (c)30 min, (d) 60 min. The films Prepared at $T_a = 65$ C, $Ph = 10$, Zn conc. = 0.2 M, Tu conc. = 0.2 M.

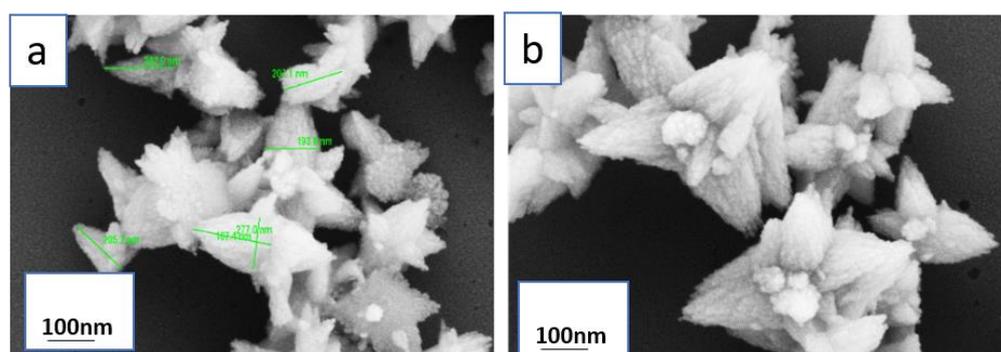


Figure S3. FESEM images of ZnS thin film formed with the different deposition temperature. (a) 45 °C, (b) 65 °C. The films Prepared at $pH = 10$, $t = 10$ mintes. Zn conc. = 0.2 M, Tu conc. = 0.2 M.

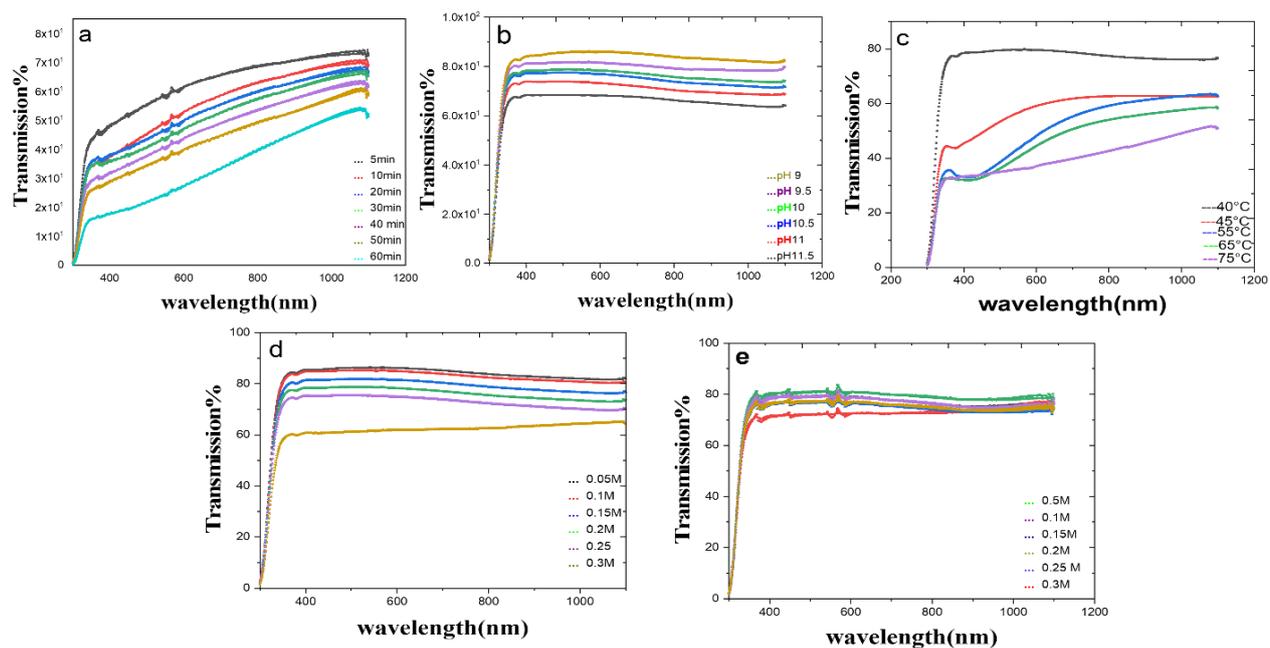


Figure S4. Optical transmission spectra of ZnS thin films deposited at various (a) Times (b) pH (c) Temperatures (d) Zinc acetate concentration (e) Thiourea concentration.

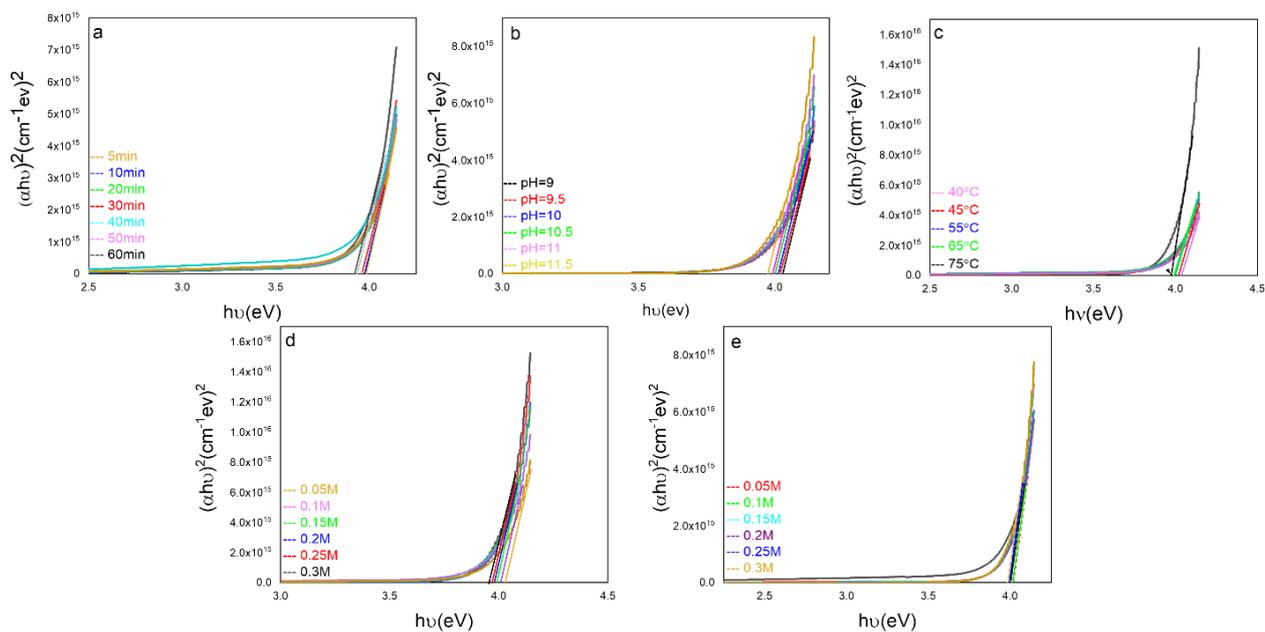


Figure S5. The optical energy gap of ZnS thin films deposited at various (a) Times (b) pH (c) Temperatures (d) Zinc acetate concentration (e) Thiourea concentration.