



## Synthesized of Zinc-oxide Nanostructures by Sol-Gel Method

Abdul Quayoum

Department of Physics, A. Islamia Degree College, Lucknow

Email: [abdulquayoum@gmail.com](mailto:abdulquayoum@gmail.com)

### Abstract

The present work is synthesis of ZnO nanostructures by sol-gel method. By X-ray diffraction (XRD) pattern structural study is performed and the formation of hexagonal phase is confirmed by XRD study. In photoconductivity study, we used to perform temporal response i.e. growth and decay of photocurrent. The photo-response of prepared sample has been measured under UV illumination using thick film of powder without any binder. The fast rise and decay of photocurrent has shown during the growth and decay of photocurrent indicating suitability for UV photo detectors.

**Keywords:** ZnO, Sol-gel, XRD, Photoconductivity.

### REFERENCES

1. Westernmark K.; Rensmo H.; Lees A. C.; Vos J. G.; and Siegbahn H. (2002) *Phys. Chem. B*, 106, 10108.
2. Natsume Y.; Sakata H.; Hirayama T.; and Yanagida H. (1992) *J. Appl. Phys.*, 72, 4203.
3. Okamura T.; Seki Y.; Nagakary S.; and Okushi H. (1992) *Jpn. J. Appl. Phys*, 31, L762.
4. Aranovich J.; Ortiz A.; and Bube R. H. (1979) *J.Vac. Technol*, 16, 994.
5. Kripal R.; Gupta A. K.; Mishra S. K.; Srivastava R. K.; Pandey A. C.; Prakash S. G. *Spectr(2010) Acta Part:*
  - a. A, 76, 523.
6. Srivastava S.; Mishra S. K.; Yadav R. S.; Srivastava R. K.; Pandey A. C.; Prakash S. G. *Digest J. of Nano.*
  - a. *Bios.* 2010, 5, 161.
7. Mishra S. K.; Srivastava R. K.; Prakash S. G.; Yadav R. S.; Pandey A. C.(2010) *Opto-Electron. Rev*, 18,
  - a. 467.
8. Zhang J.; Sun L. D.; Yin J. L.; Su H. L.; Liao C. S.; and Yan C. H.(2002) *Chem. Mater.* 14, 4172.
9. Vanheusden K.; Warren W. L.; Seager C. H.; Tallant D. R.; Voigt J. A.; Gnade B. E.(1996) *J. Appl. Phys.*
  - a. Vol. 79, 7983.
10. Fan X. M.; Lian J. S.; Zhao L.; Liu Y.(2005) *Appl. Surf. Sci.*, 252, 420.
11. Tatsumi T.; Fujita M.; Kawamoto N.; Sasajima M.; Horikoshi Y.(2004) *Jpn. J. Appl. Phys.* 43, 2602.
12. Wang J.; Gao L.(2004) *J.Cryst.Growth*, 262, 290.
13. Murphy, T. E.; Moazzami K.; and Phillips J. D.(2006) *J. Elect. Mater.* 35, 543.
14. Srivastava, R. K; and Prakash S. G.(2007) *Nat Acad Sci Lett*, 30, 11.
15. Smith, R. W.; and Rose, A(1955); *Phys. Rev.*, 97, 1531.
16. Bube, R. H.(1967) *Photoconductivity of Solids*, 404 John Wiley, New York.
17. Bhat, S. V.; Vivekchand, S. R. C.; Govindaraj, A.; Rao, C. N. R.(2009) *Solid State Commu*, 149, 510.
18. Jin Y.; Wang J.; Sun B.; Blakesely J.C.; and N.C. Greenham,(2008) *Nano Lett*, 8, 1649-1653.