

**OPTICAL BAND GAP AND IR SPECTRA OF GLASSES IN THE SYSTEM [Nd<sub>2</sub>O<sub>3</sub>]<sub>(x)</sub>-[CuO]<sub>(35-x)</sub>-[P<sub>2</sub>O<sub>5</sub>]<sub>(65)</sub>**

Md. Rahim Sahar, and Agus Setyo Budi,  
Jabatan Fizik, Fakulti Sains,  
Universiti Teknologi Malaysia,  
81310 Skudai, Johor DT

**ABSTRACT**

The infrared and ultraviolet-visible spectroscopy of neodymium copper phosphate glasses on the [Nd<sub>2</sub>O<sub>3</sub>]<sub>(x)</sub>-[CuO]<sub>(35-x)</sub>-[P<sub>2</sub>O<sub>5</sub>]<sub>(65)</sub> system with  $0 \leq x \leq 10$  mol % has been studied. The study shows existence of phosphate tetrahedral dominates in lattice vibrations. It is also found out that The Urbach energy lie between 0.451 and 0.634 eV, and the optical energy gaps between 0.79 eV to  $2.34 \pm 0.01$  eV.

<http://journal.masshp.net/wp-content/uploads/Journal/2006/Rahim%20Sahar%20115-120.pdf>

**REFERENCES**

- [1]. Sampaio, J.A., Baeso, M.L., Gama, S., (2002). J. of Non-Cryst.Solids 304, 293-298.
- [2]. Khan, M. N., Harani, R., and Ahmed, M.M., (1985). J.Mater. Sci. 20, 2207
- [3]. Reisfeld, R. and Lieblich, N., (1973). J.Phys.Chem. Solids 34, 1467
- [4]. [4] Sarma, Y.K., Marthur, S.C., Dube.D.C,(1996). J.Mater.Sci.Lett. 15, 1054.
- [5]. Weber, M.J., (1990). J. of Non-Cryst.Solids 123, 208.
- [6]. Tanabe, S., Hirao, K., and Soga, N., (1992). J. of Non-Cryst.Solids 142, 148.
- [7]. Ratnakaram, Y.C. and Viswanadha, A.R., (2000). J. of Non-Cryst.Solids 277, 142-154
- [8]. D. Ilieva, B. Jivov, D. Kovacheva, Ts. Tsacheva, Y. Dimitriev, (2001). J. Non. Cryst.Solids 293-295, 562-568.
- [9]. Peter Znasik and Miroslav Jamnicky, (1992). J.Non Cryst. Solids 146, 74-80