Solid State Science and Technology, Vol. 13, No 1 & 2 (2005) 32-38
ISSN 0128-7389

ANALYSIS OF OPTICAL PHONON VIBRATIONS IN RAMAN SPECTROSTROSCOPY OF LITHIUM NIOBATE CRYSTAL

Ngurah Made D.P., Md. Rahim Sahar and Md. Radzi Sudin

Physics Department, Faculty of Science,
Universiti Teknologi Malaysia,
81310 UTM Skudai, Johor Bahru

ABSTRACT

The Raman spectrum of $LiNbO_3$ has been measured for various scattering configurations in crystals with different compositions. The comparison between spectra recorded for congruent and the nearly stoichiometric crystals shows significant differences in the shape and the number of Raman peaks. The analysis of results may be used to describe a complete vibrational modes of the long-wavelength optical phonos in $LiNbO_3$ crystals.

REFERENCES

[1] Schaufele, R.F. and Weber M. J. 1966. *Phys. Rev.* **152**, 705
[2] Kaminow, I. P. and Johnston W.D. 1967. *Phys. Rev.* **160**, 519
[3] Claus, R. Borstel, G. Wiesendanger, E. and Steffan, L. 1972. Z. *Naturf.* a **27**, 1187
[4] Bordui, P. F. Norwood, R.G. Jundt, D.H. and Feyer, M.M. 1992. *J. Appl. Phys.* **71**, 875
[5] Malovichko, G.I. Grachev, V.G. Kokanyan, P. Schirmer, O.F. Betzler, K. Gather, B. Jermann, F. Klauer, S. Schlarb, U. and Wohlecke, M. 1993. *Appl. Phys.* A **56**, 103
[6] Schirmer, O.F. Thiemann, O. and Wohlecke, M. 1991. *J. Phys. Chem. Solids* **52**, 185
[7] Schlarb, U. Klauer, S. Wesselmann, M. Betzler, K. and Wohlecke, M. 1993. *Appl. Phys. A* **56**, 311
[8] Repelin, Y. Husson, E. Bennani, F. Proust, C. 1999. *J. Physics and Chemistry Solids* **60**, 821
[9] Caciuc, V. Postnikov, A.V. and Borstel, G. 2000., *Physical Review B* **61**, 8811
[10] Ridah, A. Fontana, M.D. and Bourson, P. 1997. *Phys. Rev. B* **56**, 5967