

# **$^{14}\text{N}$ NQR Studies of Impurity Effects on the Local Structure of $\text{NaNO}_2$ -based Mixed Systems**

S. K. Song, Y. M. Park, J. K. Jung<sup>a</sup>, Y. M. Seo, and S. H. Choh<sup>a</sup>

Department of Physics, Myongji University, Yongin Kyunggi-do, 449 - 728, Korea

<sup>a</sup> Department of Physics, Korea University, Seoul 136-701, Korea

Reprint requests to Prof. S. K. S.; Fax: +82-335-335-7248; E-mail: sksong@wh.myongji.ac.kr

Z. Naturforsch. **55 a**, 219–224 (2000); received August 23, 1999

*Presented at the XVth International Symposium on Nuclear Quadrupole Interactions, Leipzig, Germany, July 25 - 30, 1999.*

The influence of impurities on the  $^{14}\text{N}$  NQR lineshape of  $\text{Na}_{1-x}\text{Ag}_x\text{NO}_2$  and  $[\text{NaNO}_2]_{1-x}[\text{BNO}_3]_x$  (B = Na, K) at room temperature has been investigated. Carrying out spectral analysis in conjunction with classification of the local field inhomogeneities according to the structurally isomorphic,  $\text{Na}_{1-x}\text{Ag}_x\text{NO}_2$ , and anisomorphic  $[\text{NaNO}_2]_{1-x}[\text{BNO}_3]_x$  systems, enabled an understanding of the microscopic nature of impurity-induced local disorder. The iso- and anisomorphic systems reveal their own unique features of the impurity induced local disorder. They are characterized by a static, random distribution of impurities in the isomorphic system and a fast motion of the impurity-induced mobile point defects in the anisomorphic system. However, for both systems, neither a change of the  $^{14}\text{N}$  NQR frequency nor a multisplitting of the lines is observed because of the relatively low symmetry.

*Key words:* NQR; Lineshape; Iso- and Anisomorphic Systems; Local Disorder.