

THE TEMPERATURE DEPENDENCE OF THE RAMAN BANDWIDTHS FOR THE HARD MODES OF THE AMMONIUM HALIDES CLOSE TO PHASE TRANSITIONS

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This study gives the temperature dependence of the Raman bandwidths for the $\nu_5(174 \text{ cm}^{-1})$ mode of NH_4Cl and for the $\nu_5(177 \text{ cm}^{-1})$ mode of NH_4Br . We analyze our observed Raman bandwidths of those phonon modes according to the soft-hard mode coupled model close to the phase transitions in these crystals. Our analyses give that the values of the critical exponent for the Raman bandwidths are $\beta = 0.13$ for the $\nu_5(174 \text{ cm}^{-1})$ mode of NH_4Cl ($T_c=241.3\text{K}$) and for the $\nu_5(177 \text{ cm}^{-1})$ mode of NH_4Br ($T_c=234\text{K}$) in the first order phase region of these crystalline systems.