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Raman spectra and lattice dynamics of disordered complex perovskite $BaMg_{1/3}Ta_{2/3}O_3$ SEVERIAN GVASALIYA, DAN HÜVONEN, Laboratorium fur Festkorperphysik, ETH Honggerberg, 8093 Zurich, Switzerland, SERGEY LUSHNIKOV, Ioffe Physico-Technical Institute, 194021, St Petersburg, Russia, ELENA POPOVA, St. Petersburg State University, Department of Crystallography, 199034, Russia & Ioffe Physico-Technical Institute, 194021, St Petersburg, Russia, TATIYANA SHAPLYGINA, Ioffe Physico-Technical Institute, 194021, St Petersburg, Russia, ANDREY ZHELUDEV, Laboratorium fur Festkorperphysik, ETH Honggerberg, 8093 Zurich, Switzerland —
In relaxor ferroelectrics the chemical and the displacive ionic disorders coexist and may cause a relaxation of the selection rules for Raman scattering. We performed a Raman scattering study of $BaMg_{1/3}Ta_{2/3}O_3$ (BMT), which is chemically disordered cubic perovskite showing no evidences for displacive disorder. Polarized Raman spectra from a single crystal of BMT were collected in the temperature range of $5 - 550$ K. We are going to discuss the symmetry assignments of the observed modes and their temperature evolution. Simplified shell-model for the lattice dynamics of BMT will be presented. The results for BMT will be compared to the well-known observations for the Raman spectra from related relaxor ferroelectrics $PbMg_{1/3}Ta_{2/3}O_3$ and $PbMg_{1/3}Nb_{2/3}O_3$. In particular, the lowest Raman line observed in BMT is at $\sim$110 cm^{-1}, whereas the doublet line in $PbMg_{1/3}Ta_{2/3}O_3$ is observed around 50 cm^{-1}. Also, we found out that the width of well-isolated A_{1g} line of BMT is approximately two times narrower than that observed in relaxors.

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