Recently, heterocyclic imidazole derivatives (especially phenylimidazoles) have attracted considerable attention because of their unique optical properties [1]. From solution of formic acid have been obtained two types solvates of 1,4-bis(4’,5’-diphenylimidazol-2-yl)benzene with formic acid – unstable and stable forms. The first unstable form – yellow plate, Sp.gr.P-1, cell parameters: \(a=10.420(2)\,\text{Å}\), \(b=13.804(3)\,\text{Å}\), \(c=15.251(3)\,\text{Å}\), \(\alpha=63.86(3)^\circ\), \(\beta=82.23(3)^\circ\), \(\gamma=70.58(3)^\circ\), \(V=1857.1(7)\,\text{Å}^3\), the host/guest ratio is 1:5. Five formic acid molecules form the glue between two molecules of bisimidazole derivative through hydrogen bonding, thus forming 0D supramolecular arrangement. The second stable form – yellow bulk needles, crystallized in C2/c space group and have following cell parameters: \(a=35.395(7)\,\text{Å}\), \(b=5.1576(10)\,\text{Å}\), \(c=20.6074(4)\,\text{Å}\), \(\beta=120.85(3)^\circ\), \(V=3229.7(11)\,\text{Å}^3\). Host/guest ratio is 1:2:2H2O. In this structure host and guest molecules via H-bonds are associated in 1D chain in the c-axis direction. A proton from the formic acid was transferred to one of the imidazole rings. Therefore one nitrogen of the imidazole ring is positively charged.

Keywords: crystal engineering; hydrogen bonding; supramolecular assemblies

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Langatate crystals (La\(_2\)(Ga\(_{1-x}\)Ta\(_x\))O\(_{14}\) – LGT, Sp.gr. P21), are the most promising materials for making both bulk acoustic and surface acoustic waves devices. The aim of this paper is to exhibit a role of some growth conditions in a property peculiarities and structural perfection of LGT. Crystals with dimensions 3” have been grown in <0001> (Z-crystals) and <0111> (Y54°-crystals) directions by Czochralski technique. They were analyzed by X-ray (CAD-4 and Xcalibur diffractometers, MoK\(_\alpha\)) and neutron (TRICCS diffractometer, \(\lambda=1.18\,\text{Å}\)) diffractometer located at the channel 5C2, \(\lambda=0.83\,\text{Å}\) diffraction methods. The refinement of the crystal structure was carried out using