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Strain effect on the visible emission in ferroelectric nanotubes: template and wall-thickness effect YUNSANG LEE, Soongsil University, SANGDON BU, JINKYU HAN, Chonbuk National University — We investigated the strain effect on temperature-dependent photoluminescence property in the clamped (with template) and free-standing (without template) $PbTiO_3$ (PTO) nanotubes. The wall-thickness of nanotubes was varied from 25 to 80 nm with the outer diameter fixed to 420 nm. While all nanotubes show sizable green/yellow emission, the temperature dependent shift of the emission energy is significantly suppressed in the clamped PTO nanotubes, which is attributed to the lattice strain driven by the template clamping. This clamping effect is more significant for thinner nanotubes. Even in the free-standing PTO nanotubes the temperature-dependence of emission is affected by the wall-thickness. The similar behavior is identified in the $Pb(Zr,Ti)O_3$ nanotubes. Our finding is the clear manifestation of the template and geometrical shape effect on the optical property of the nanotubes.

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