

Abstract Submitted
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Positron lifetime measurements of origin of photoconductivity in SrTiO₃ single crystals¹ FARIDA SELIM, Bowling Green State University, MARIANNE TAURN, MATTHEW MCCLUSKEY, Washington State University, SELIM GROUP COLLABORATION, MCCLUSKEY GROUP COLLABORATION — Positron lifetime measurements were carried out to investigate the origin of two orders of magnitude persistent photoconductivity (PPC) observed in bulk single crystals of strontium titanate (SrTiO₃). PPC was realized in annealed samples after exposing them to sub-bandgap light at room temperature. Positron lifetime measurements were performed on as-grown and annealed samples before and after light illumination. They revealed that PPC is attributed to the excitation of an electron from a titanium vacancy related defect into the conduction band. These studies emphasize the importance of positron lifetime spectroscopy in studying complex oxides and revealing new physics and suggest the possibility of developing SrTiO₃ for holographic memory. Funding for positron lifetime measurements was provided by the National Science Foundation (DMR1359523 grant).

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