

PW-P002

## Room Temperature Luminescence from ion Beam or Atmospheric Pressure Plasma Treated SrTiO3

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3 MeV proton irradiated SrTiO<sub>3</sub> (STO) single crystal exhibits a blue and green mixed luminescence. However, the same proton irradiated STO deposited with very thin Pt layer does not show any luminescence. This Pt layer involved in preventing the damage caused by arcing that comes from tens of kV surface voltage build-up due to secondary electron induced charge up at the surface of insulator during ion beam irradiation. It implies that luminescence of ion irradiated STO originated from the modified STO surface layer caused by arcing rather than direct ion beam irradiation effect. Atmospheric pressure plasma, a simple and cost-effective method, treated STO also exhibits the same kind of blue and green mixed luminescence as the ion beam treated STO, because this plasma also creates a surface damage layer by arcing.

**Keywords:** SrTiO<sub>3</sub>, Atmospheric pressure plasma, Ion beam, Photoluminescence



