SUPPORTING INFORMATION

Tuning the Photocatalytic Activity of $SrTiO_3$ by Varying the Sr/Ti Ratio: Unusual Effect of Viscosity of the Synthesis Medium

Harsha Bantawal[a], U Sandhya Shenoy[b] and D Krishna Bhat[a]*

[a]Department of Chemistry, National Institute of Technology Karnataka, Surathkal, Mangalore-575025, India.

[b]Department of Chemistry, College of Engineering and Technology, Srinivas University, Mukka, Mangalore-574146, India.

*Corresponding author E-mail address: denthajekb@gmail.com

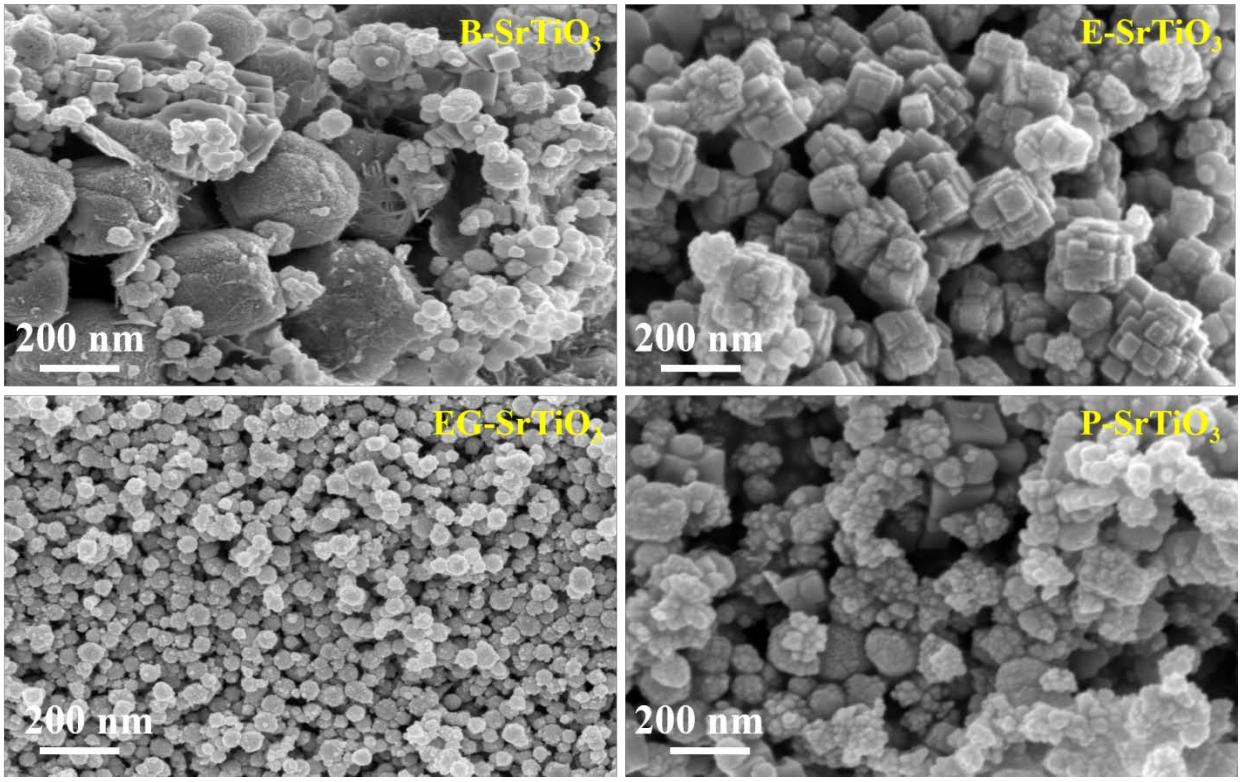

Figure. S1 FESEM images of $SrTiO_3$ nanostructures synthesized in different solvents.

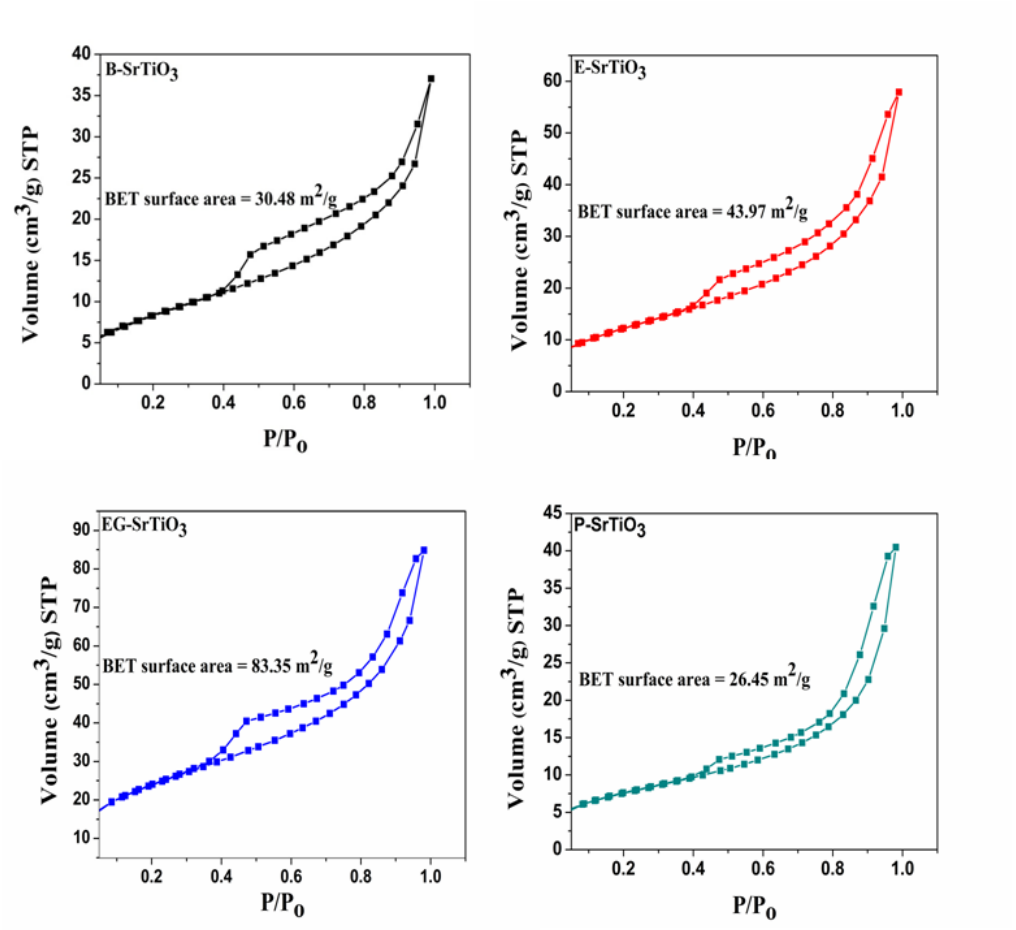

Figure. S2 Nitrogen adsorption-desorption isotherms of $SrTiO_3$ nanostructures synthesized in different solvents.

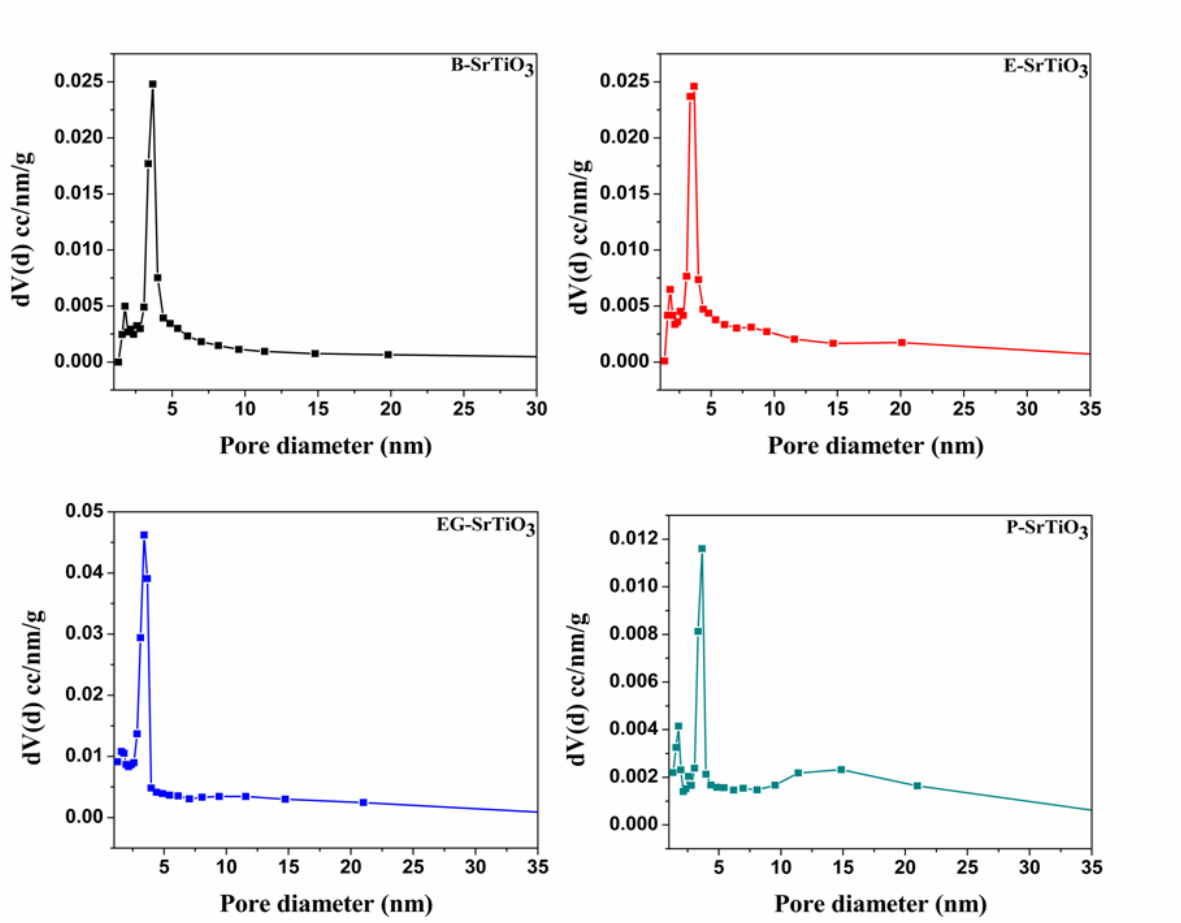

Figure. S3 BJH pore size distribution of $SrTiO_3$ nanostructures synthesized in different solvents.

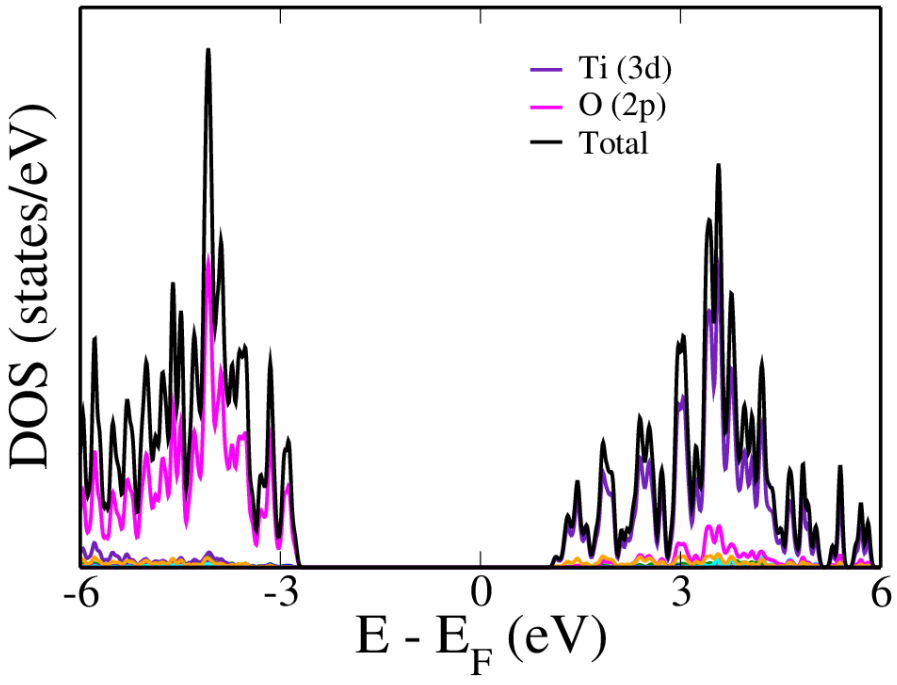

Figure. S4 pdos of primitive unit cell of $SrTiO_3$ simulated using HSE calculations.

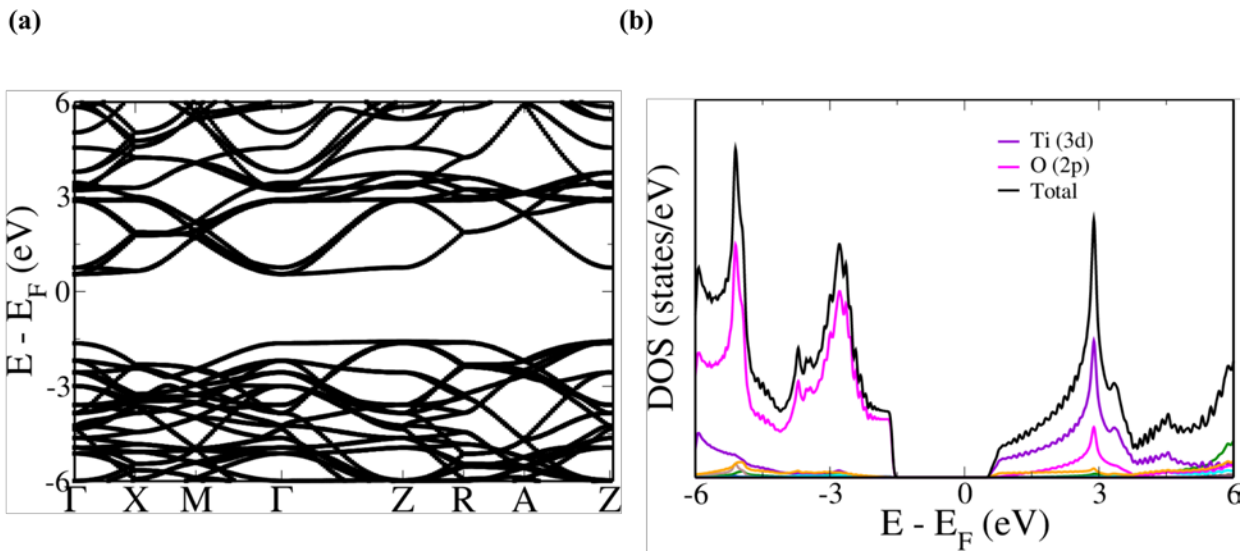

Figure. S5 (a) Electronic structure and (b) pdos of 2 x 2 x 1 supercell of $SrTiO_3$.

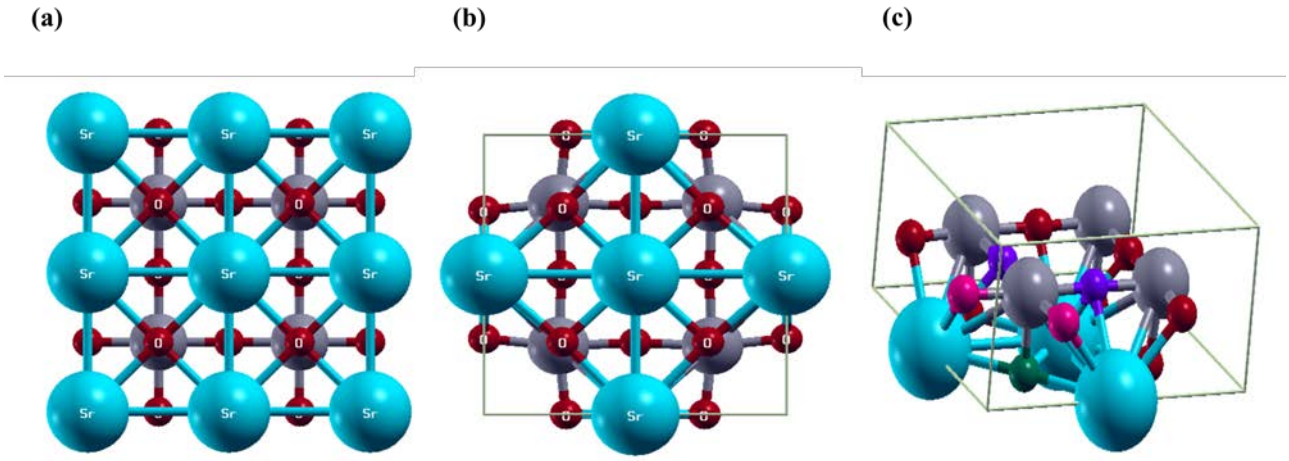

Figure. S6 Crystal structure of 2 x 2 x 1 supercell of (a) stoichiometric $SrTiO_3$, (b) $SrTiO_3$ with Sr vacancy and (c) relaxed $SrTiO_3$ with Sr vacancy depicting changes in structural parameters. Cyan - Sr atom, grey - Ti atom, red - O atom, pink, purple and green - O atom with differing bond length while bonding to Ti atom.

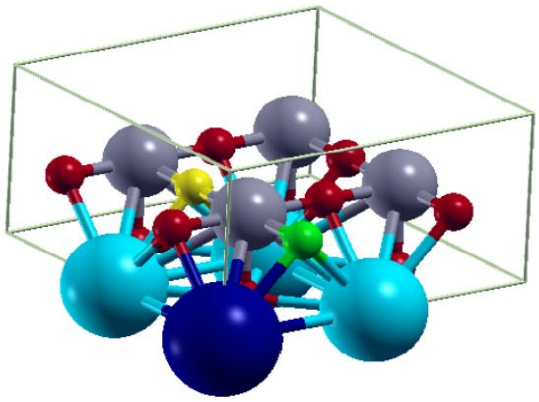

Figure. S7 Crystal structure of 2 x 2 x 1 supercell of $SrTiO_3$ with Sr and O vacancy depicting two possible symmetry in-equivalent positions of O atom (green and yellow). Cyan - Sr atom, grey - Ti atom, red - O atom, blue - site where Sr vacancy is created.

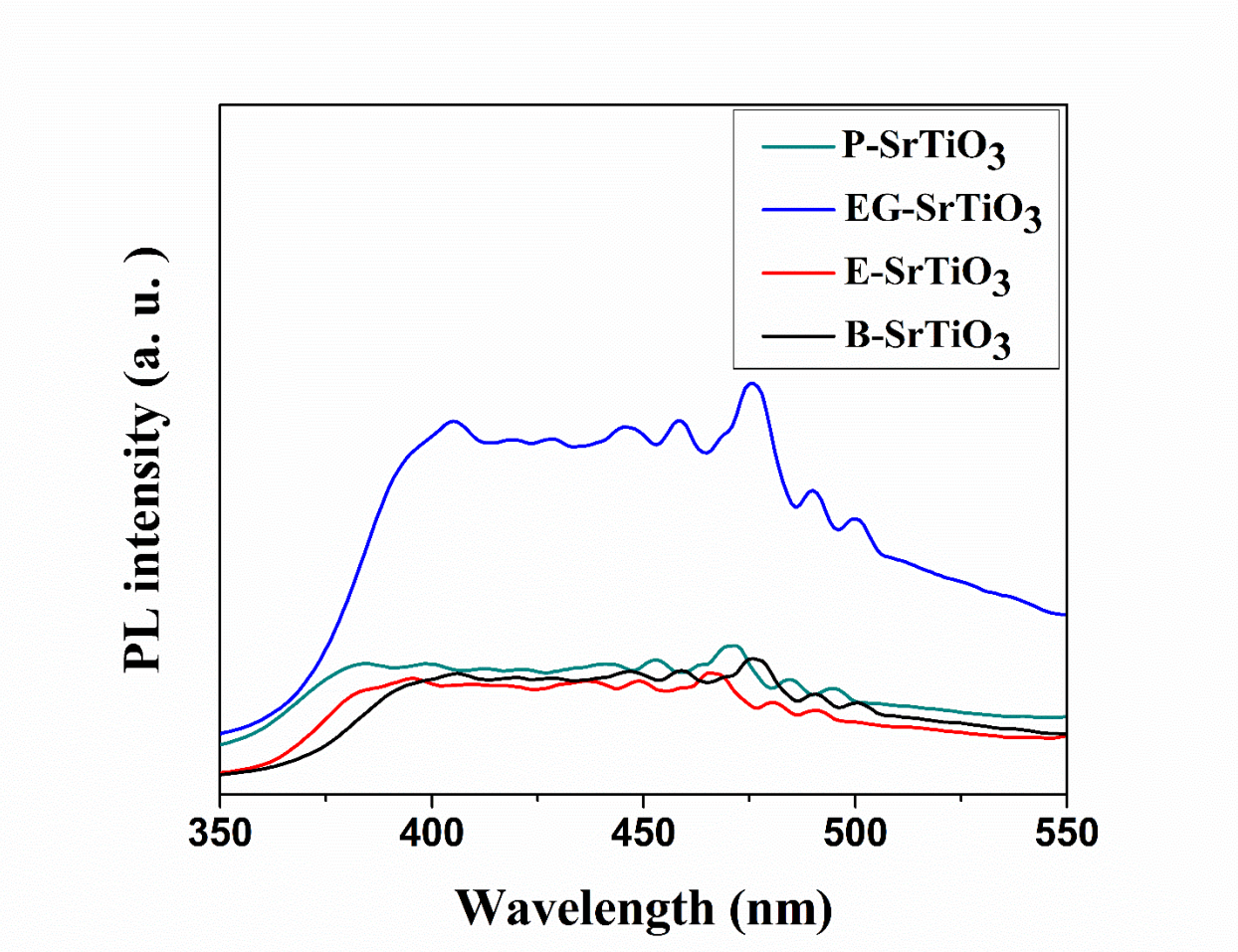

Figure. S8 Photoluminescence spectra of $SrTiO_3$ nanostructures synthesized in different solvents.

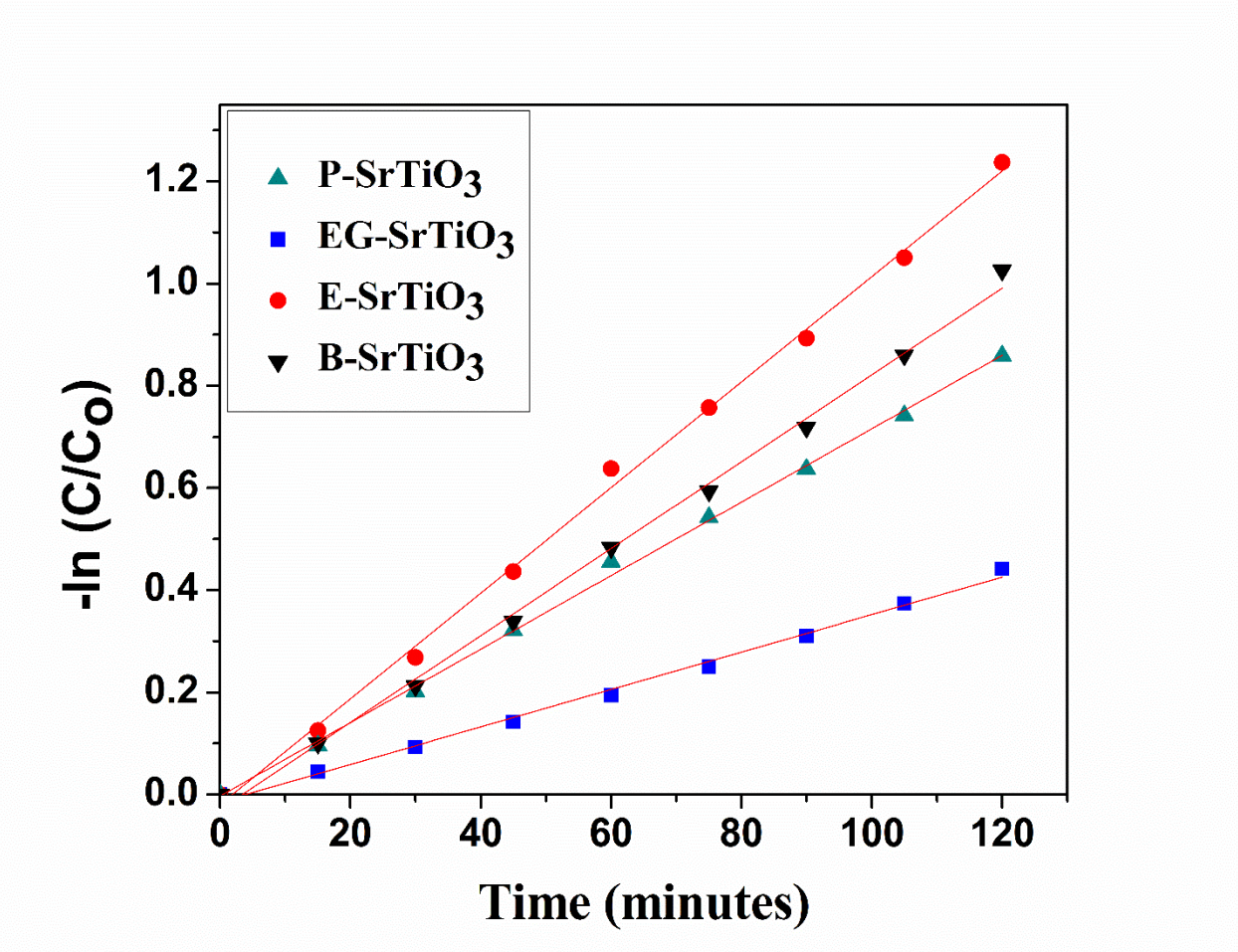

Figure. S9 Kinetics of the photocatalytic degradation of MB by $SrTiO_3$ nanostructures.

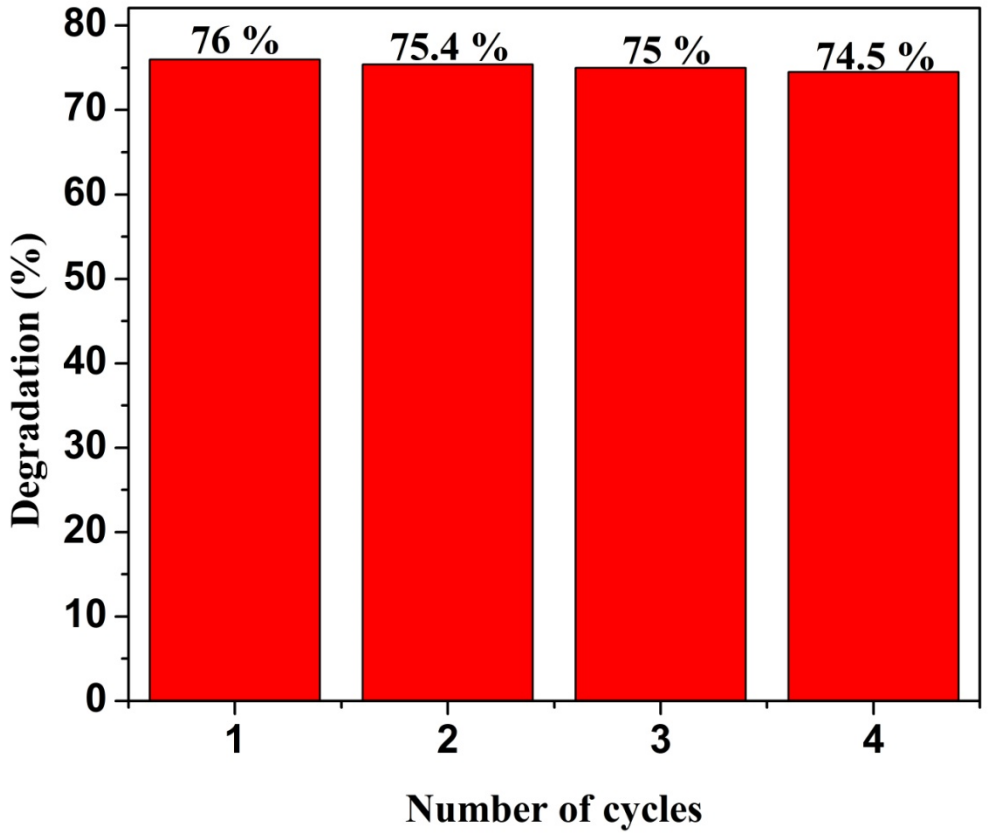

Figure. S10 Reusability of E-$SrTiO_3$ catalyst for the degradation of MB under visible light.