Supporting Information

Improved visible-light photoactivities of porous $LaFeO_3$ by coupling with nanosized alkaline earth metal oxides and its mechanism insight

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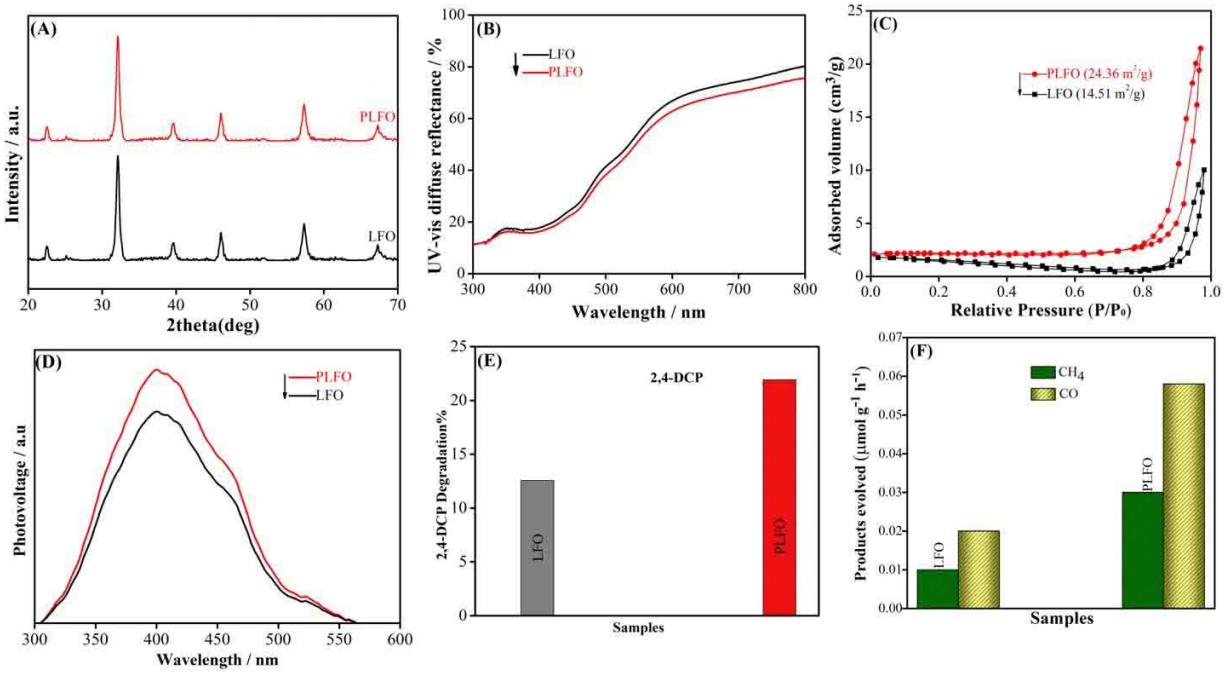

Figure S1 XRD patterns (A), UV-vis diffuse reflectance spectra (B), N_2 adsorption-desorption isotherms (C), SS-SPS (D), Photocatalytic activities for 2,4-DCP degradation (E) and CO_2 conversion (F) of LFO and PLFO.

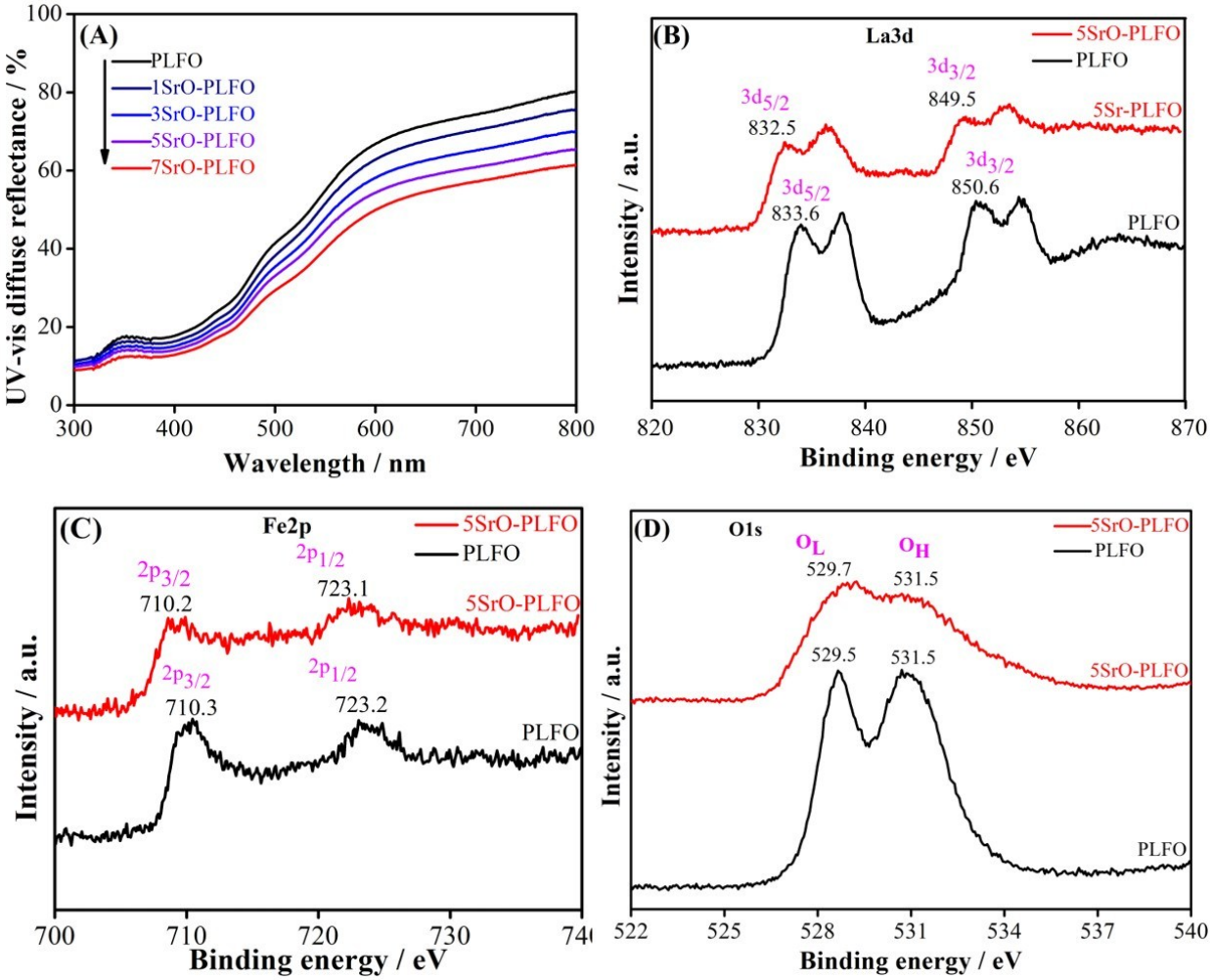

Figure S2 UV-vis diffuse reflectance spectra (A) and XPS of different elements in PLFO and 5SrO-PLFO.

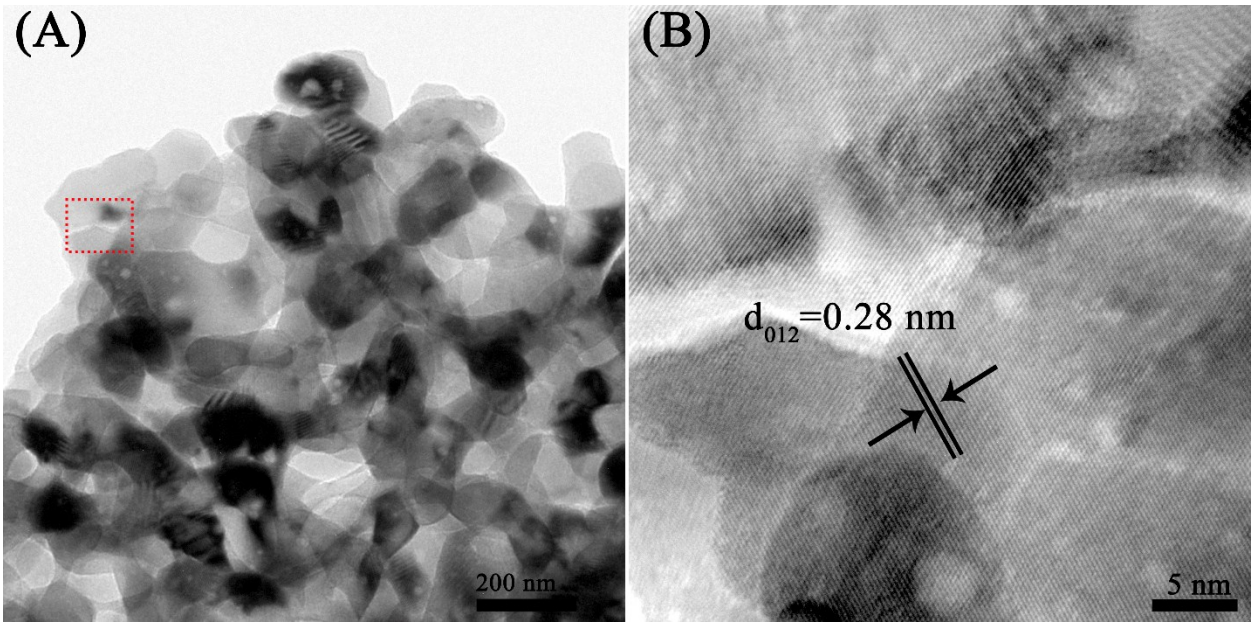

Figure S3 TEM (A) and HRTEM (B) images of PLFO.

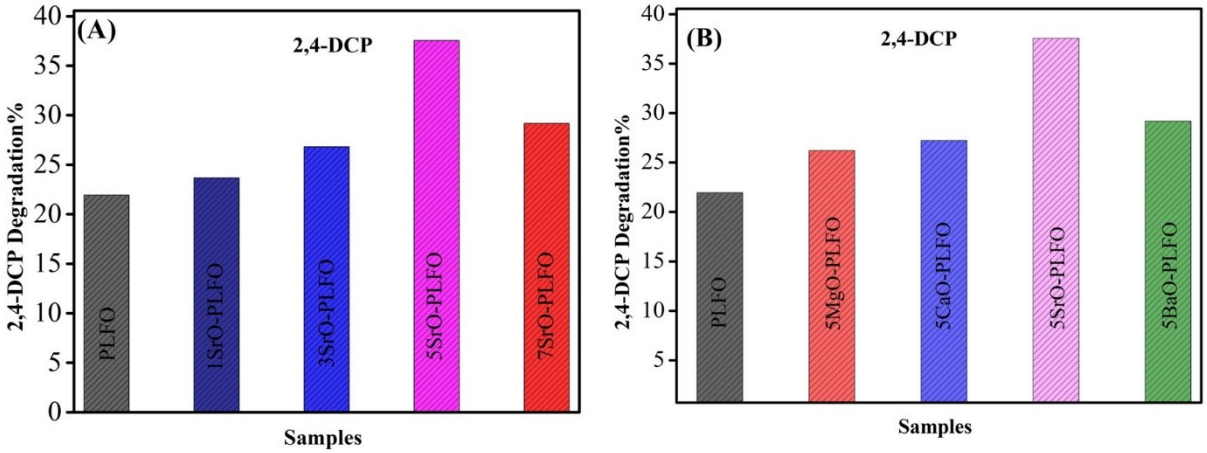

Figure S4 Visible-light photoactivities for 2,4-DCP degradation of PLFO and XSrO-PLFO (A) and 5MO-PLFO (B). (M: Mg, Ca, Sr and Ba).

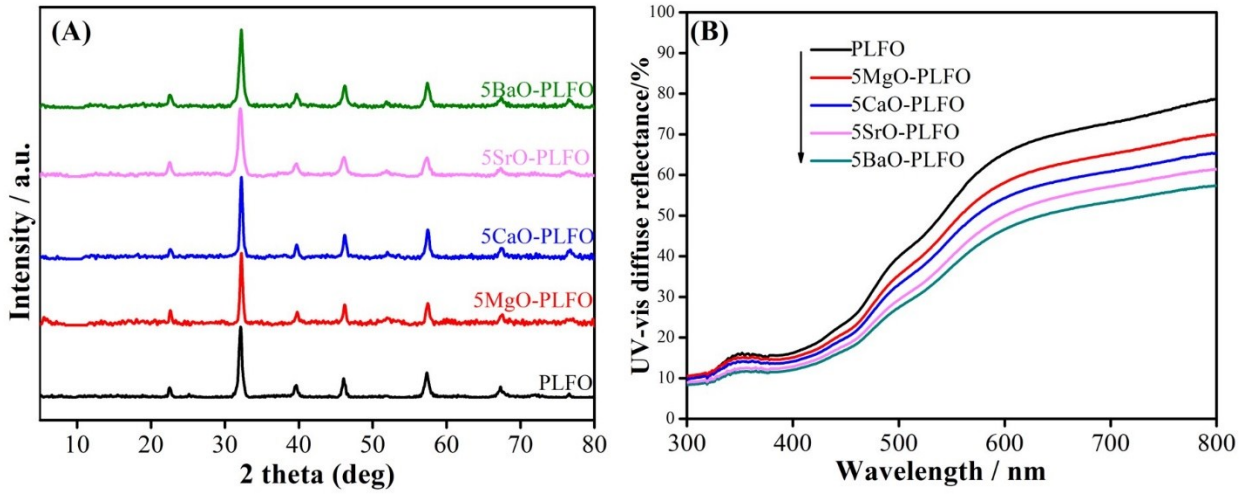

Figure S5 XRD patterns (A) and UV-vis diffuse reflectance spectra (B) of PLFO and 5MO-PLFO (M: Mg, Ca, Sr and Ba).

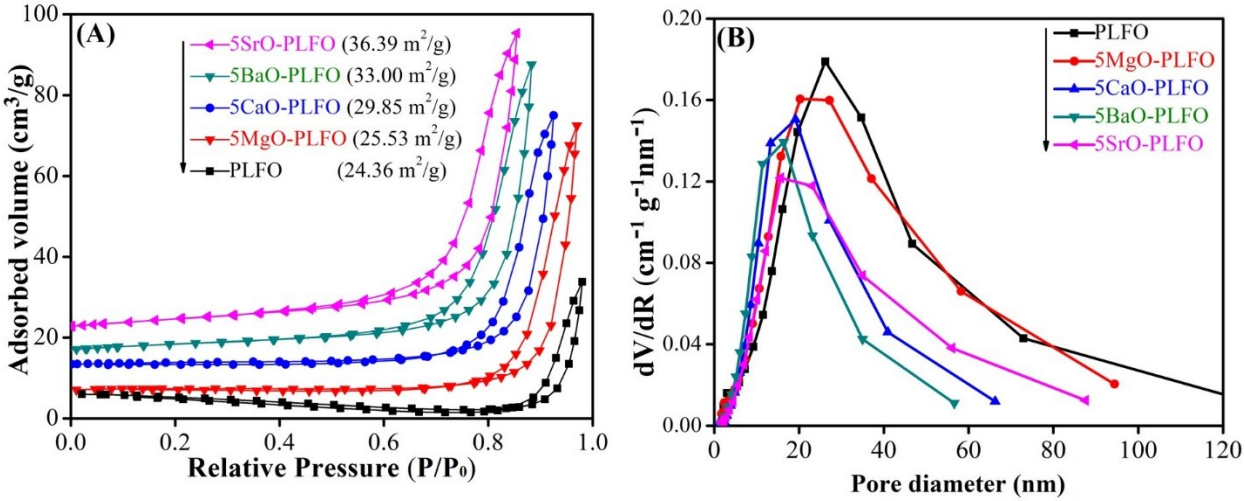

Figure S6 N_2 adsorption-desorption isotherms (A) and pore diameters (B) of PLFO and 5MO-PLFO (M: Mg, Ca, Sr and Ba).

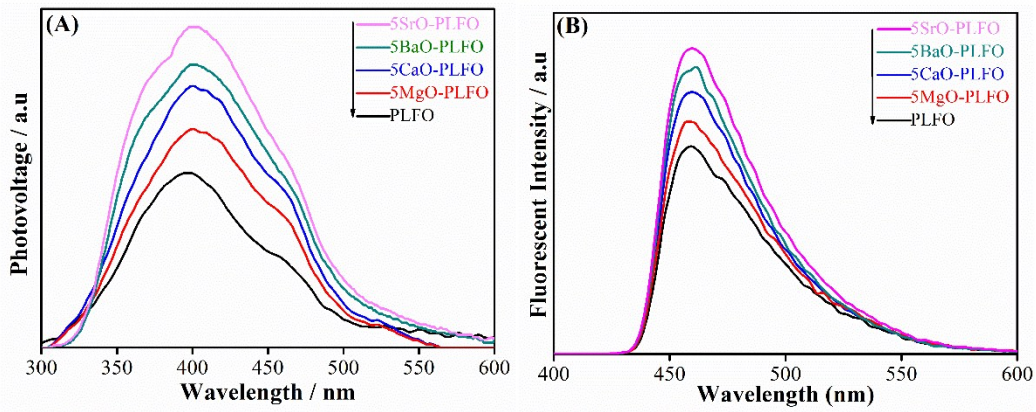

Figure S7 SPS responses (A) and FS spectra related produced •OH radicals (B) of PLFO and 5MO-PLFO (M: Mg, Ca, Sr and Ba).

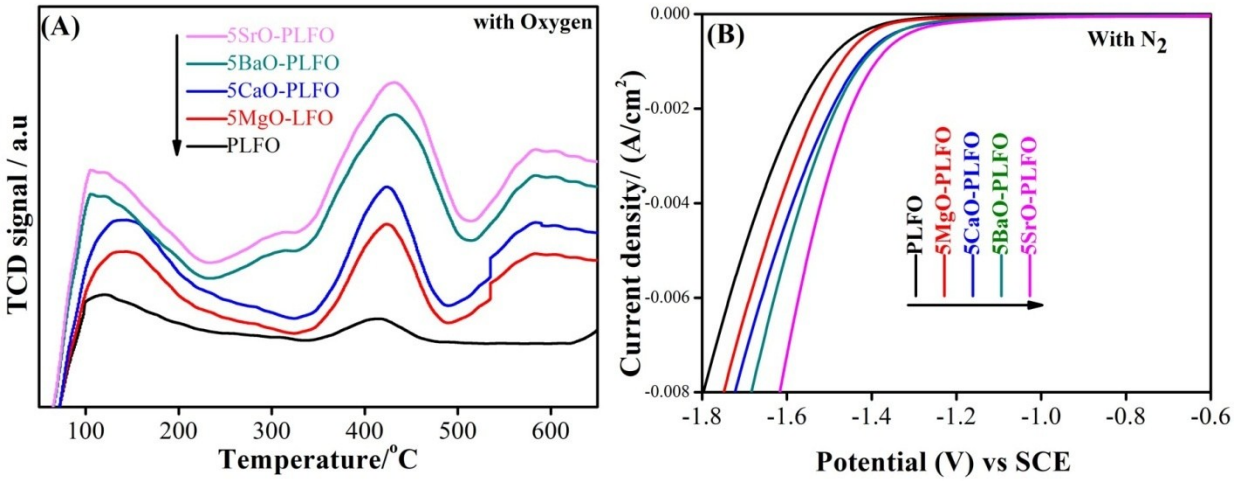

Figure S8 O_2-TPD (A) and electrochemical reduction (EC) curves in N_2-bubbled systems (B) of PLFO and 5MO-PLFO (M: Mg, Ca, Sr and Ba).

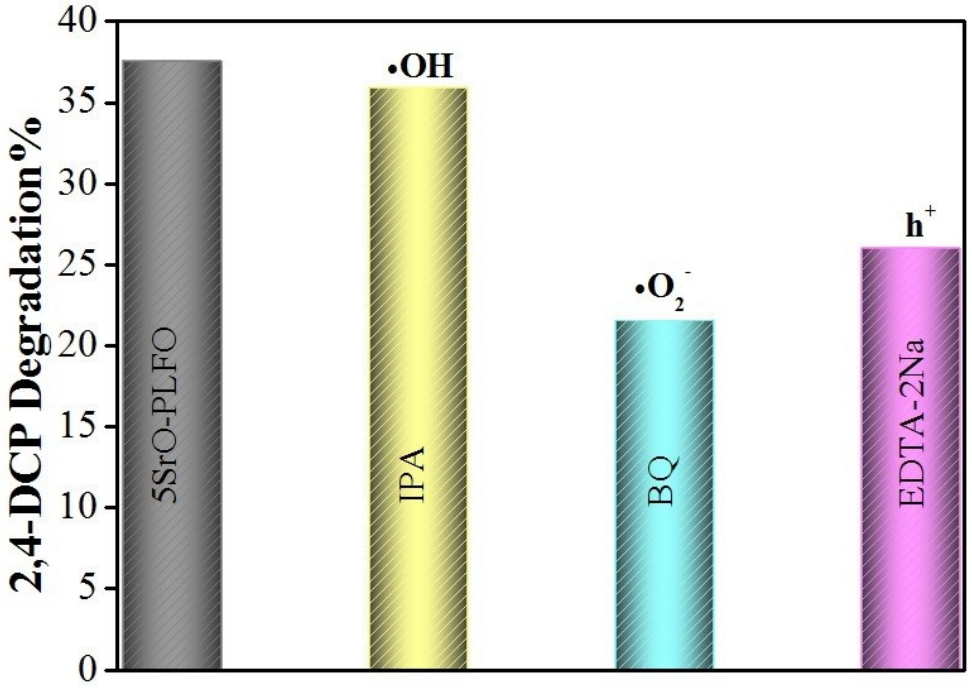

Figure S9 Scavenger experiments related the main active species of 5SrO-PLFO for the degradation of 2,4-DCP under visible-light irradiation.

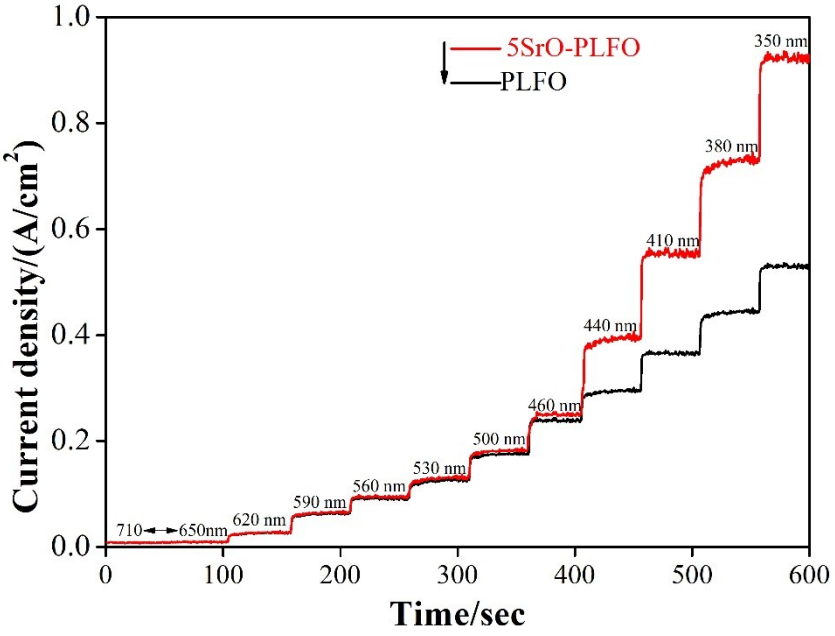

Figure S10 Photocurrent action spectra of PLFO and 5SrO-PLFO samples.

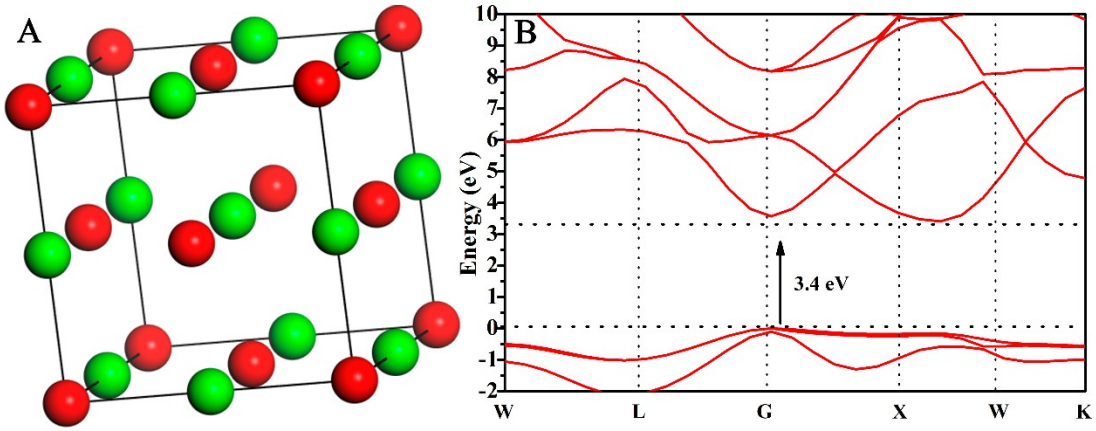

Figure S11 The crystal structure (A) and band diagram of SrO (B). The calculations were performed within the framework of density functional theory (DFT) framework embedded in the CASTEP code. The exchange-correlation energy is treated with generalized gradient approximation (GGA), using spin-polarized Perdew-Burke-Ernzerhof (PBE) functional.

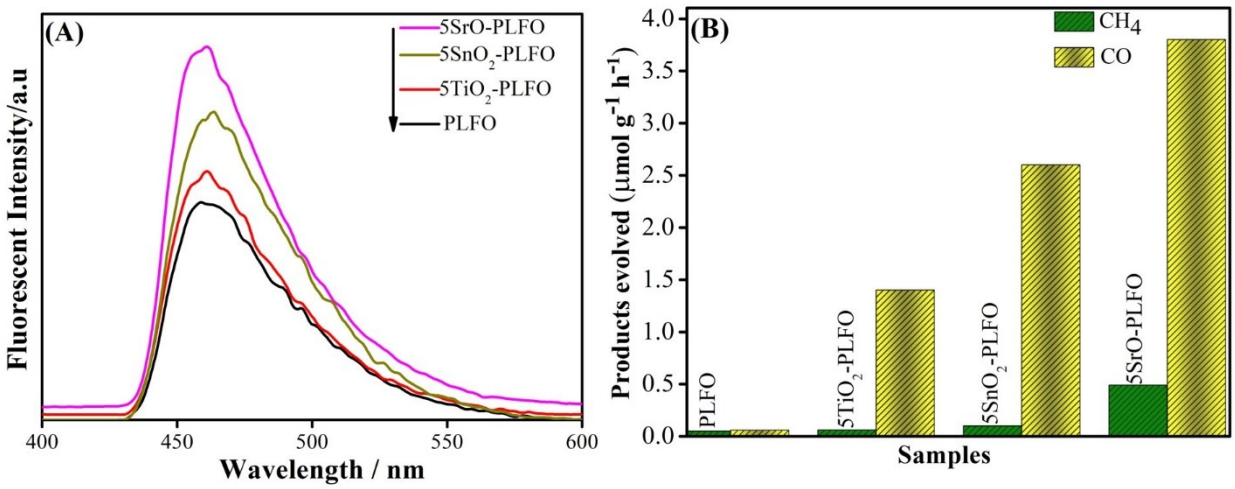

Figure S12 FS spectra related produced •OH radicals (A) and visible-light activities (B) of 5SrO-PLFO, 5SnO_2-PLFO, 5TiO_2-PLFO and PLFO.