

Supplementary Information

Rutile TiO₂-based Perovskite Solar Cells

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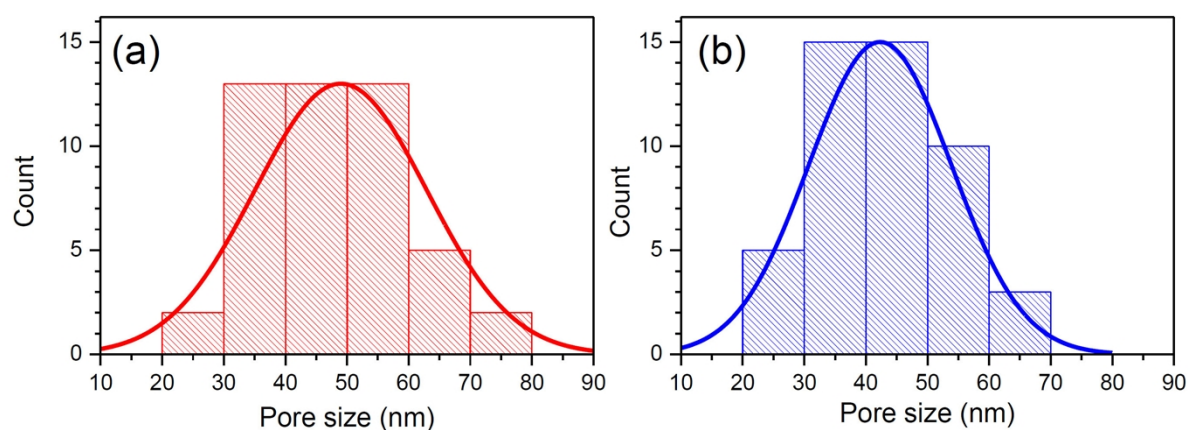


Figure S1. Pore diameter distribution of (a) anatase and (b) rutile TiO_2 films estimated from SEM image.

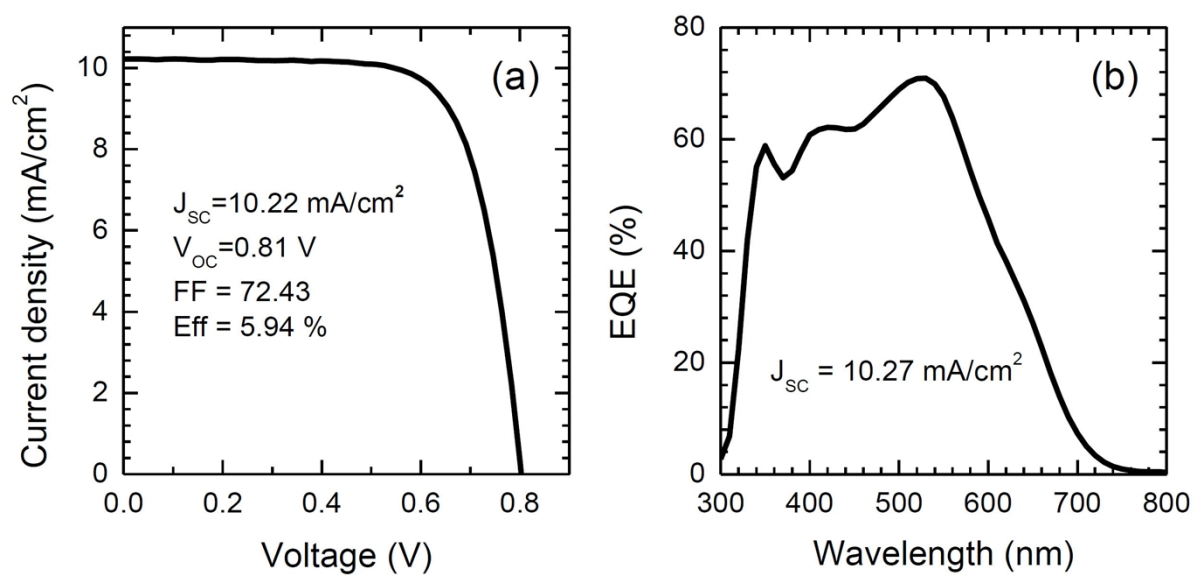


Figure S2. (a) Current density-voltage curve and (b) EQE spectrum of N719 dye-sensitized solar cell based on liquid electrolyte.

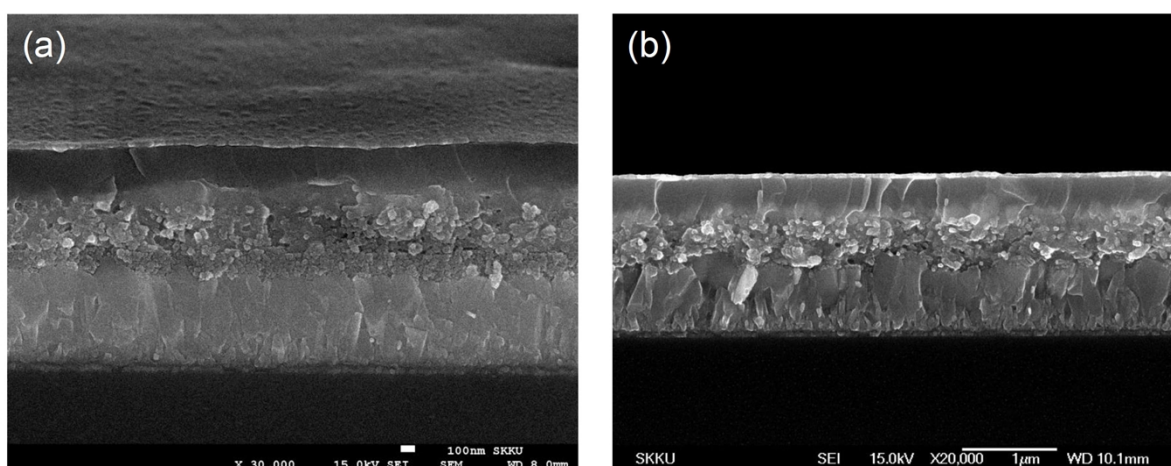


Figure S3. Cross-sectional SEM images of rutile TiO_2 based perovskite solar cells, where perovskite layer was deposited by (a) one-step and (b) two-step method.

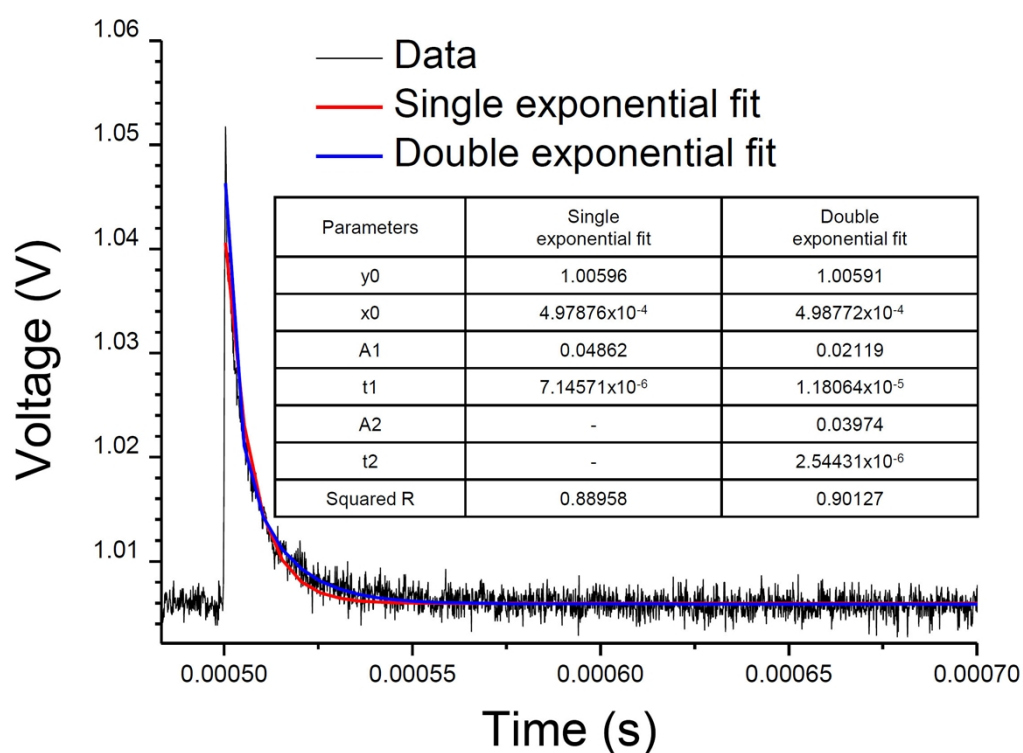


Figure S4. Photovoltage decay curve (black line) and the fit data with single exponential decay function (red line) and double exponential decay function (blue line). Inset table

represents fit parameters. Single exponential function was $y = y_0 + A_1 \exp(-(x-x_0)/\tau_1)$ and double exponential function was $y = y_0 + A_1 \exp(-(x-x_0)/\tau_1) + A_2 \exp(-(x-x_0)/\tau_2)$.

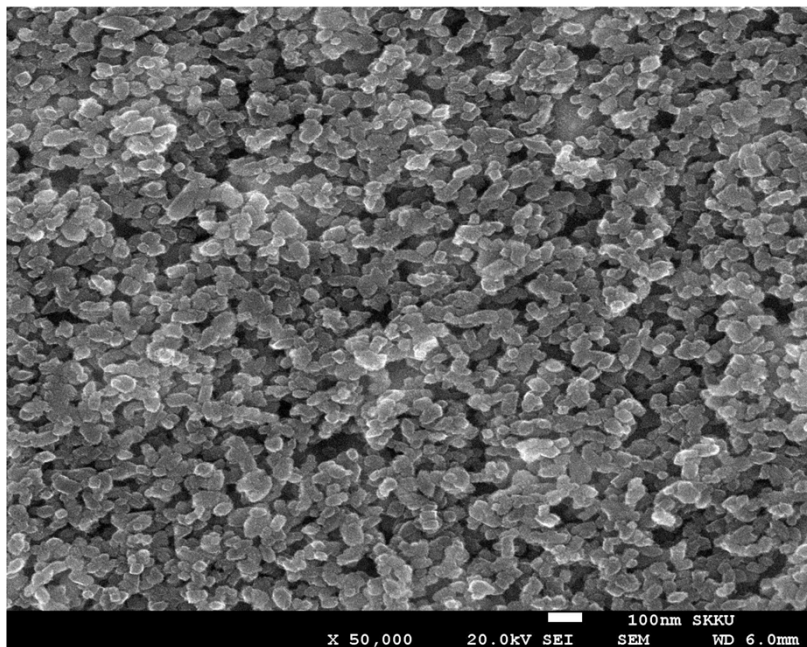


Figure S5. SEM image of mesoporous TiO₂ layer with EC/TiO₂ = 0.72