

Supporting Information

Post modification by Aluminum oxide for improved performance in all-solid-state perovskite solar cells

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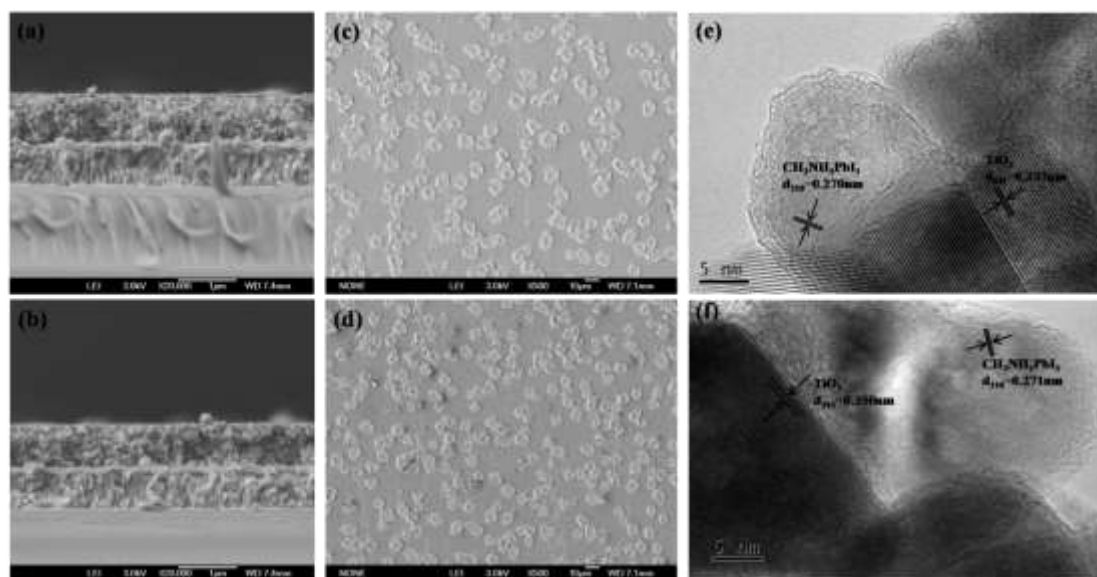


Fig. S1 SEM and TEM images: (a) cross sectional SEM image of $\text{TiO}_2/\text{CH}_3\text{NH}_3\text{PbI}_3$, (b) cross sectional SEM image of $\text{TiO}_2/\text{CH}_3\text{NH}_3\text{PbI}_3/\text{Al}_2\text{O}_3$, (c) SEM image of $\text{TiO}_2/\text{CH}_3\text{NH}_3\text{PbI}_3$, (d) SEM image of $\text{TiO}_2/\text{CH}_3\text{NH}_3\text{PbI}_3/\text{Al}_2\text{O}_3$, (e) HRTEM of $\text{TiO}_2/\text{CH}_3\text{NH}_3\text{PbI}_3$, (f) HRTEM of $\text{TiO}_2/\text{CH}_3\text{NH}_3\text{PbI}_3/\text{Al}_2\text{O}_3$.

(Figure S1 (c)(d)) shows that square or circular pillars of $\text{CH}_3\text{NH}_3\text{PbI}_3$ grows on TiO_2 and high resolution transmission electron microscope (HRTEM) (Figure S1 (e)(f)) reveals $\text{CH}_3\text{NH}_3\text{PbI}_3$ on TiO_2 and there are uncovered sites on TiO_2 , which is consistent with previous reports.

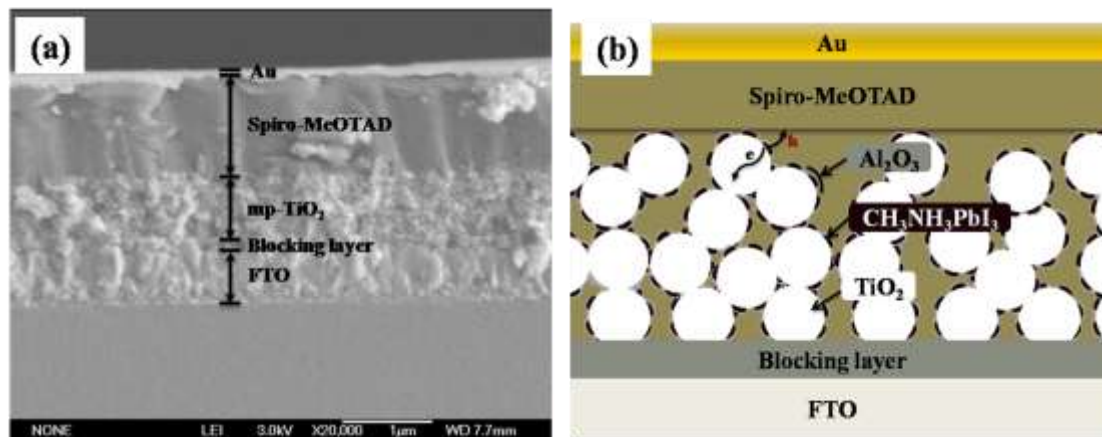


Fig. S2 Cross-sectional SEM image of the photovoltaic device. Spiro-MeOTAD separates Au

electrode and mesoporous TiO₂.