Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.


Fig. S1. XRD spectra of $MAPbI_{3-x}Cl_x$ films exposed to $O_3$ (dark orange) and $TMA/O_3$ (orange).

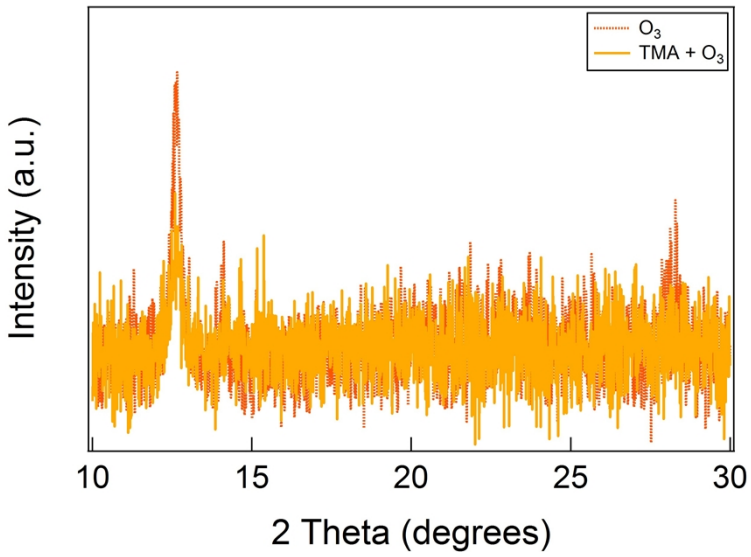
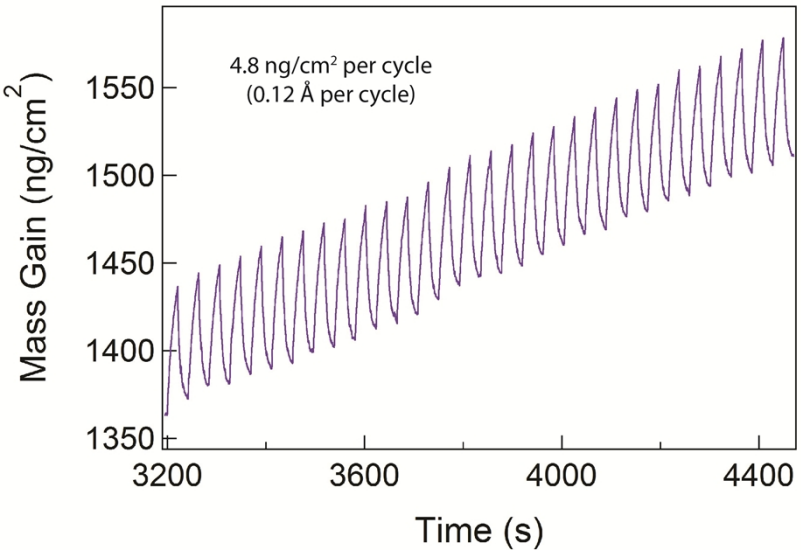


Fig. S2. In-situ quartz crystal microbalance (QCM) data recorded during 30 cycles of *nh*-$Al_2O_3$ ALD.



Video S3. Degradation of $MAPbI_{3-x}Cl_x$ films upon contact with 5 µL water droplet. Unpassivated, 3 nm *nh*-$Al_2O_3$, and 18 nm *hb*-$Al_2O_3$ (left to right).

VIDEO S3

Fig. S4. Degradation of $MAPbI_{3-x}Cl_x$ films in RH 85% as a function of time. Unpassivated, 3 nm *nh*-$Al_2O_3$, and 18 nm *hb*-$Al_2O_3$ (left to right). a), b), and c) correspond to t = 0, 6, and 48 h, respectively.

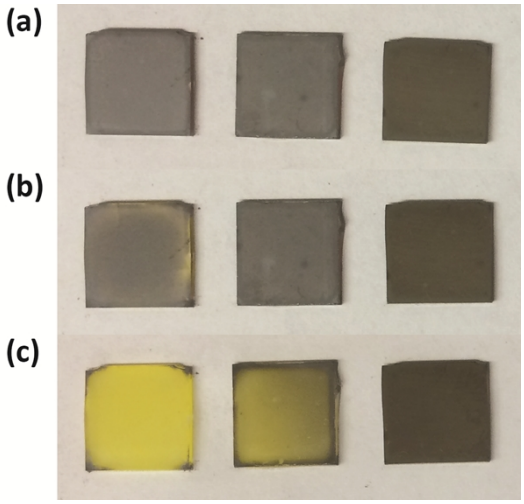
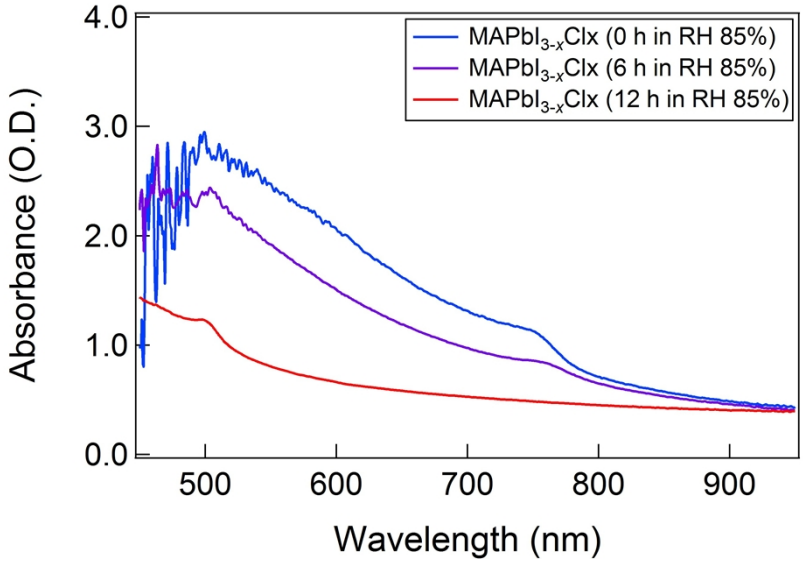


Fig. S5. UV-vis spectra of unpassivated $MAPbI_{3-x}Cl_x$ films in RH 85% as a function of time.



Video S6. Degradation of $MAPbI_{3-x}Cl_x$ films upon heating on a hotplate at 250 °C in $N_2$ filled glove box.

VIDEO S6

Fig. S7. FTIR spectra of unpassivated and 18 nm *hb*-$Al_2O_3$ passivated $MAPbI_{3-x}Cl_x$ films before and after annealing at 250 °C in a $N_2$ filled glove box.

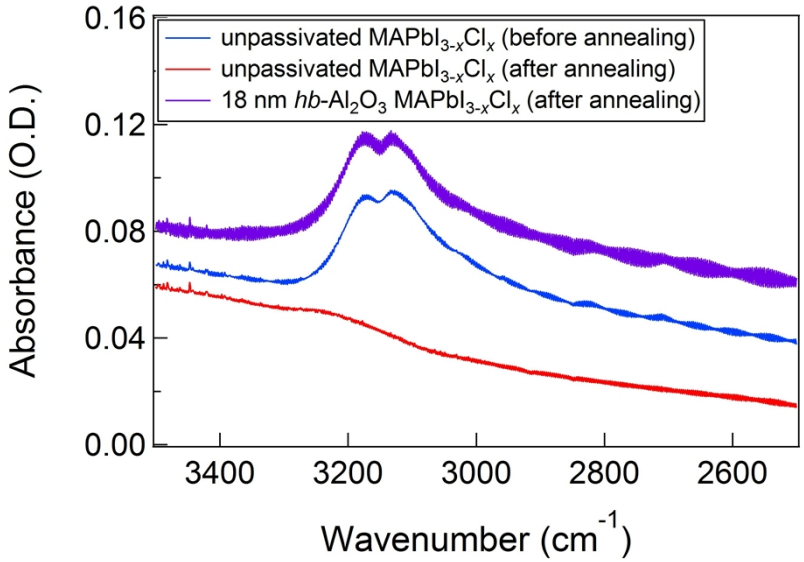


Fig. S8. XRD spectra of unpassivated, 3 nm *nh*-$Al_2O_3$, and 18 nm *hb*-$Al_2O_3$ passivated $MAPbI_{3-x}Cl_x$ films after annealing at 250 °C in $N_2$ filled glove box (t = 70 s).