Supplementary Information

**Fig. S1** EDS mapping images of signals from F elements for the surface of varying concentration of C_{13}-FAS on CH$_3$NH$_3$PbI$_3$ on glass.

**Fig. S2** Steady-state PL spectra of varying concentration of (a) non-modified (b) 0.5 wt% (c) 1.0 wt% (d) 1.5 wt% (e) 2.0 wt% (f) 2.5 wt% C$_{13}$-FAS without spiro-OMeTAD (black line) and with spiro-OMeTAD (red line) on CH$_3$NH$_3$PbI$_3$. 