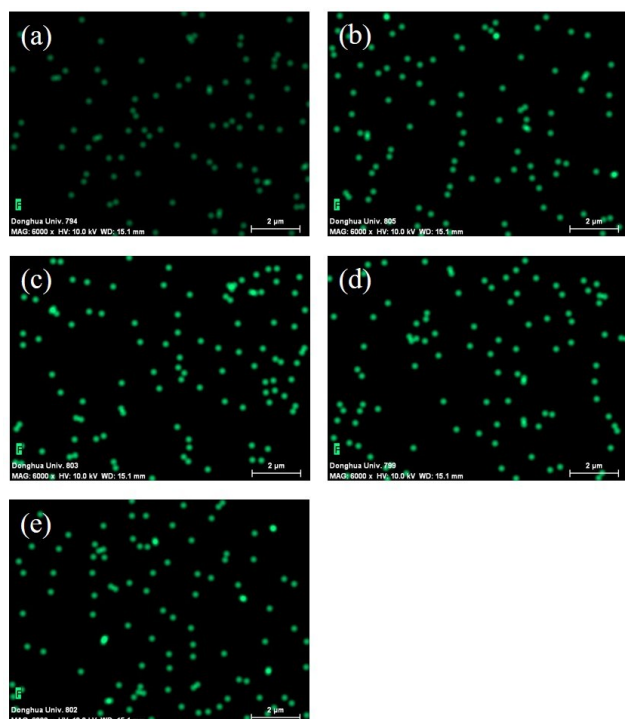
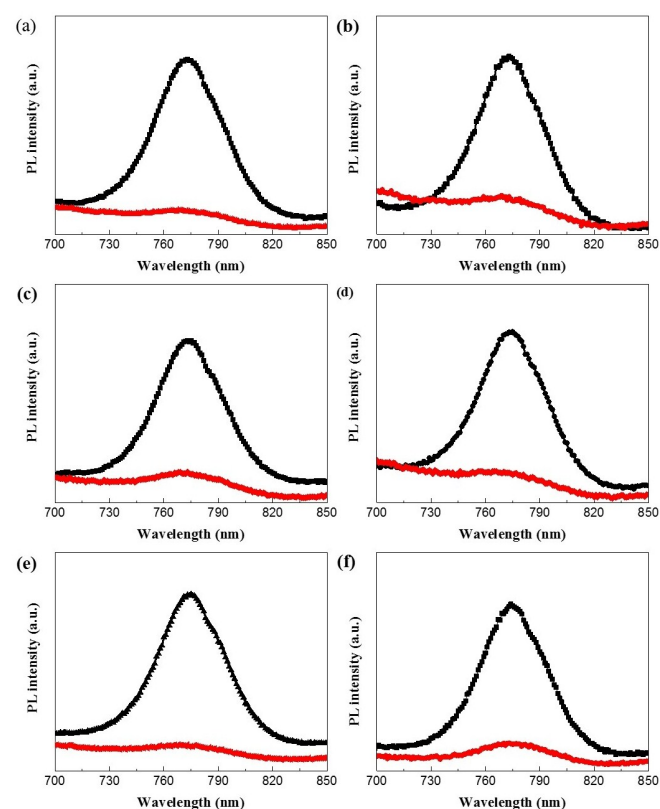


# Supplementary Information



**Fig.s1** EDS mapping images of signals from F elements for the surface of varying concentration of C<sub>13</sub>-FAS on CH<sub>3</sub>NH<sub>3</sub>PbI<sub>3</sub>/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<sub>13</sub>-FAS without spiro-OMeTAD (black line) and with spiro-OMeTAD (red line) on CH<sub>3</sub>NH<sub>3</sub>PbI<sub>3</sub>