**Calculation of the deposited Zn mass:**

$$\frac{\% wt(Zn)}{\% wt(S)} = \frac{\dfrac{M(Zn)}{Mtot}}{\dfrac{M(S)}{Mtot}} = \frac{M(Zn)}{M(S)} = const \cdot M(Zn) \qquad (S1)$$

Where M(Zn), M(S) and Mtot represent the masses of zinc, sulfur and total film mass

respectively. For all samples, spin coating conditions were identical. Therefore, sulfur mass is

regarded as constant for all films.

ZnO penetration into MEH-PPV films:

The general aproach of the proposed deposition technique is demonstrated by exposing MEH-

PPV films to the same ALD sequence of DEZ and water. Figure S3 shows that for MEH-

PPV, similarly to P3HT, ZnO grows inside the conjugated polymer film.
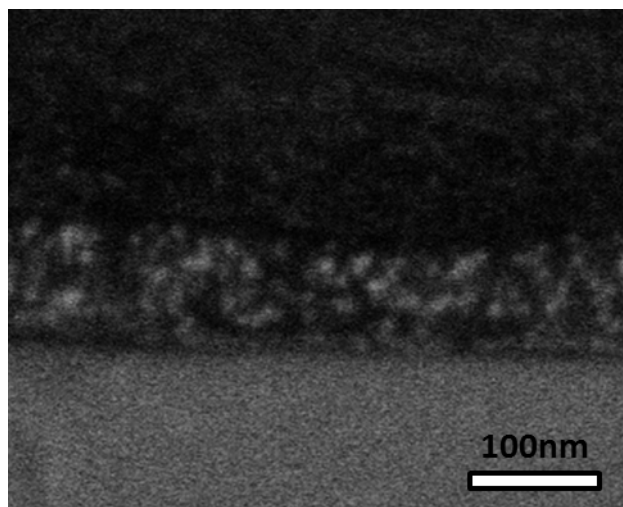
Figure S2: Cross section BSE HRSEM micrograph of a MEH-PPV film on a silicon

substrate, after 50 ALD alternating cycles of DEZ and water.