

Fig. S1 The plane view and the corresponding sectional view SEM images of 2D CuSCN deposited on ITO substrates with different deposition time. (a) (d) 10 min, (b) (e) 20 min, and (c) (f) 30 min.

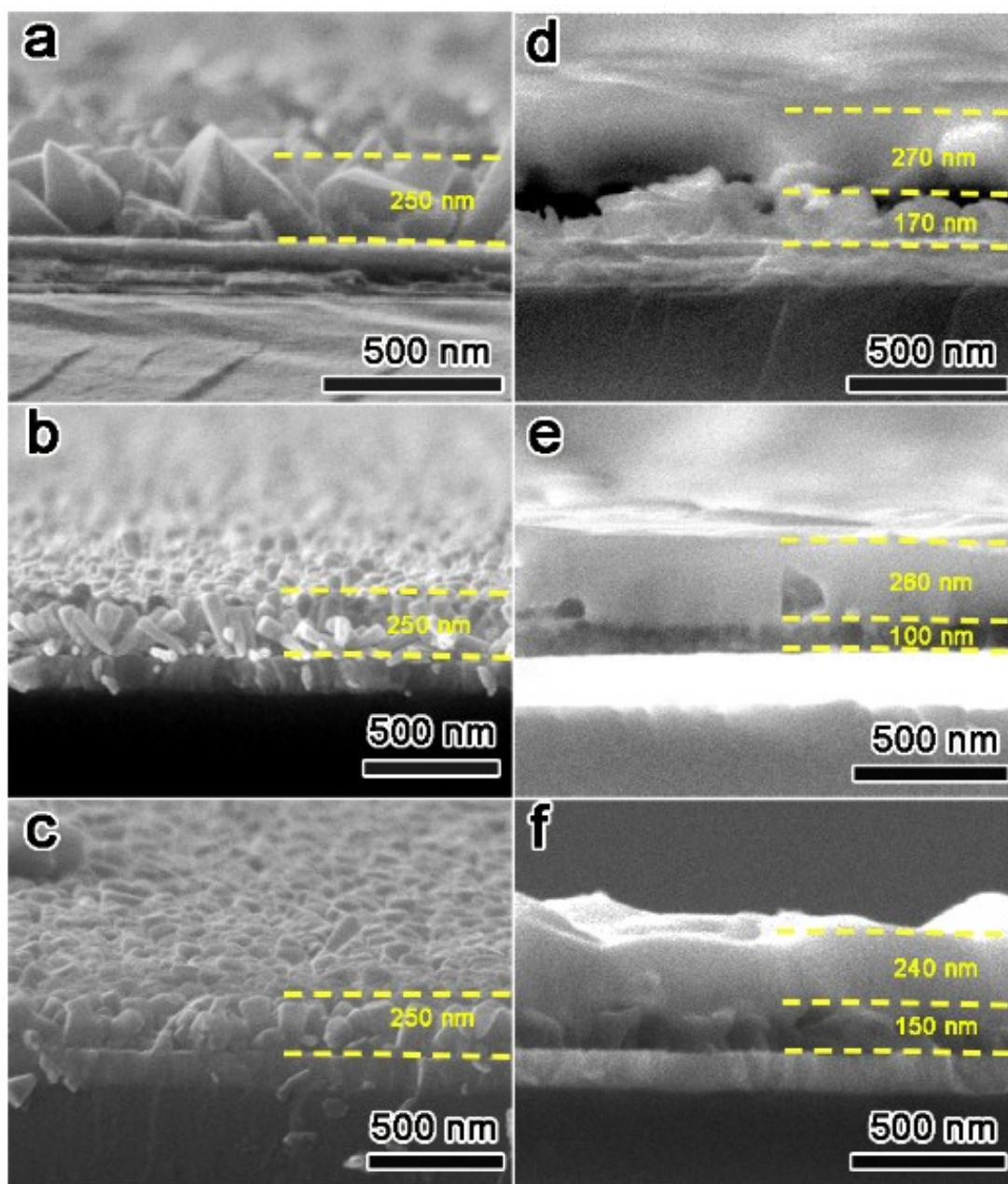


Fig. S2 The cross section SEM images of (a) 2D CuSCN, (b) NWs CuSCN, (c) 3D CuSCN, and perovskite films deposited on (d) 2D CuSCN, (e) NWs CuSCN, and (f) 3D CuSCN.

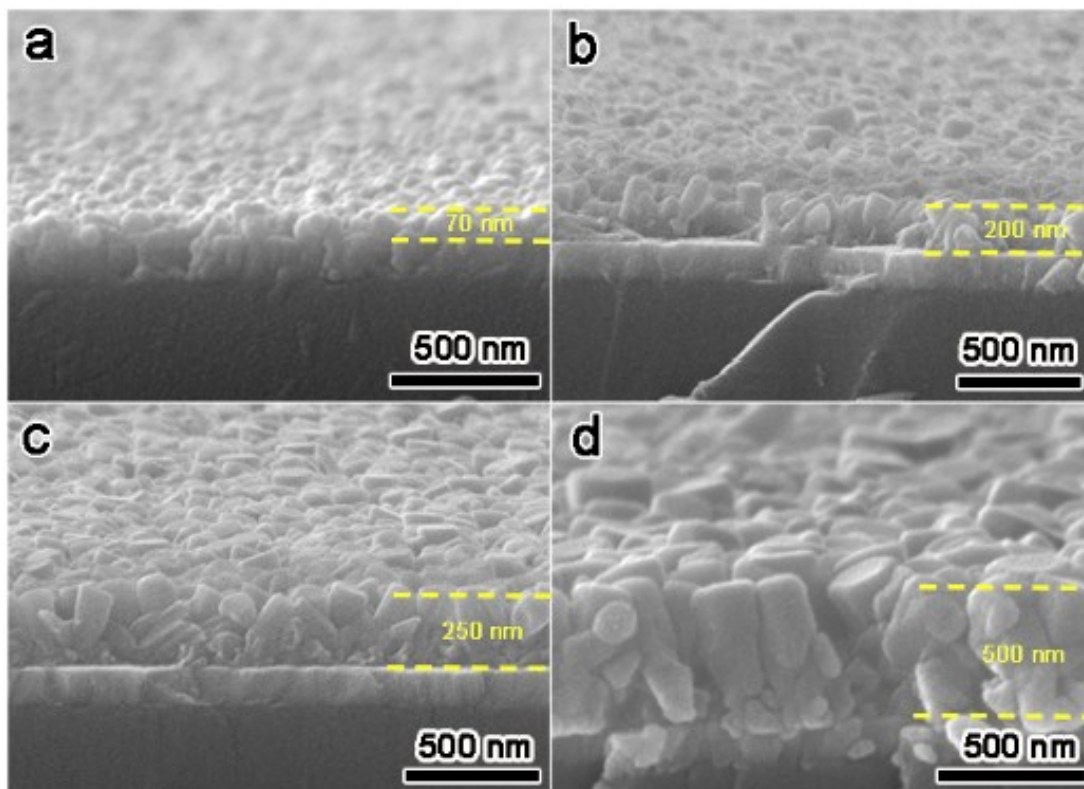


Fig. S3 The cross section SEM images of 3D CuSCN with different deposition time. (a) 1 min, (b) 3 min, (c) 5 min, and (d) 10 min.

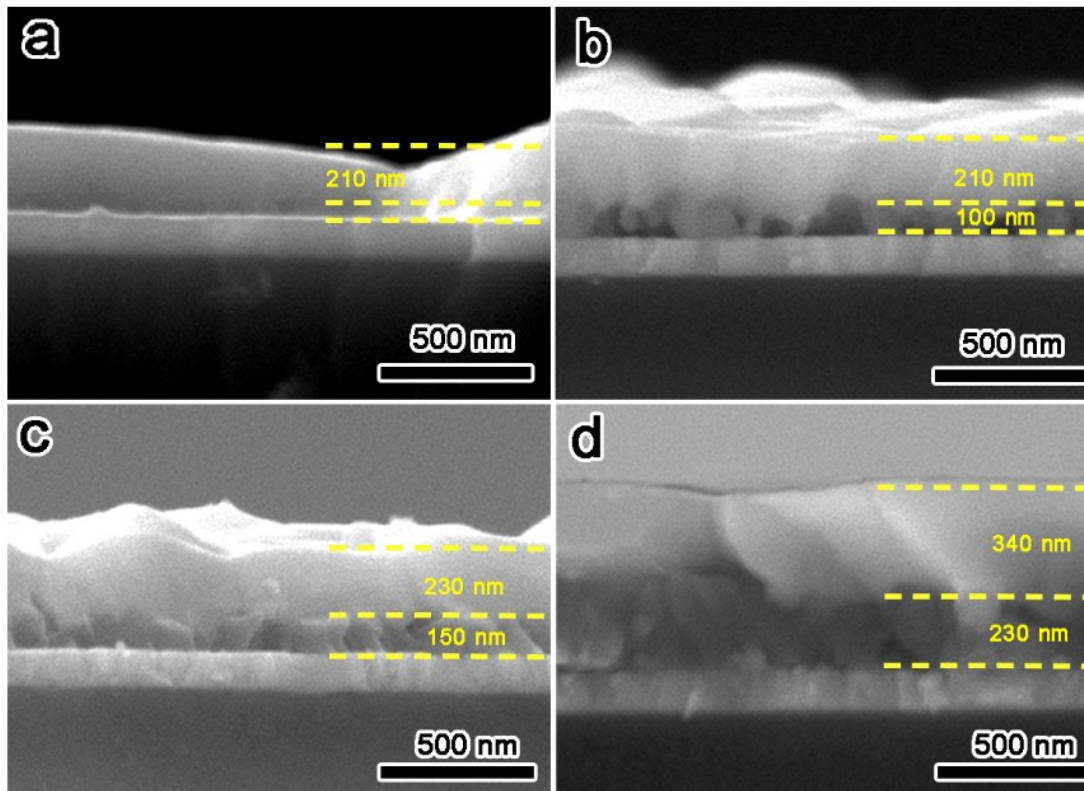


Fig. S4 The cross section SEM images of perovskite layers deposited on the 3D CuSCN substrates. (a) 1 min, (b) 3 min, (c) 5 min, and (d) 10 min.