Electronic Supplementary Material (ESI) for CrystEngComm.

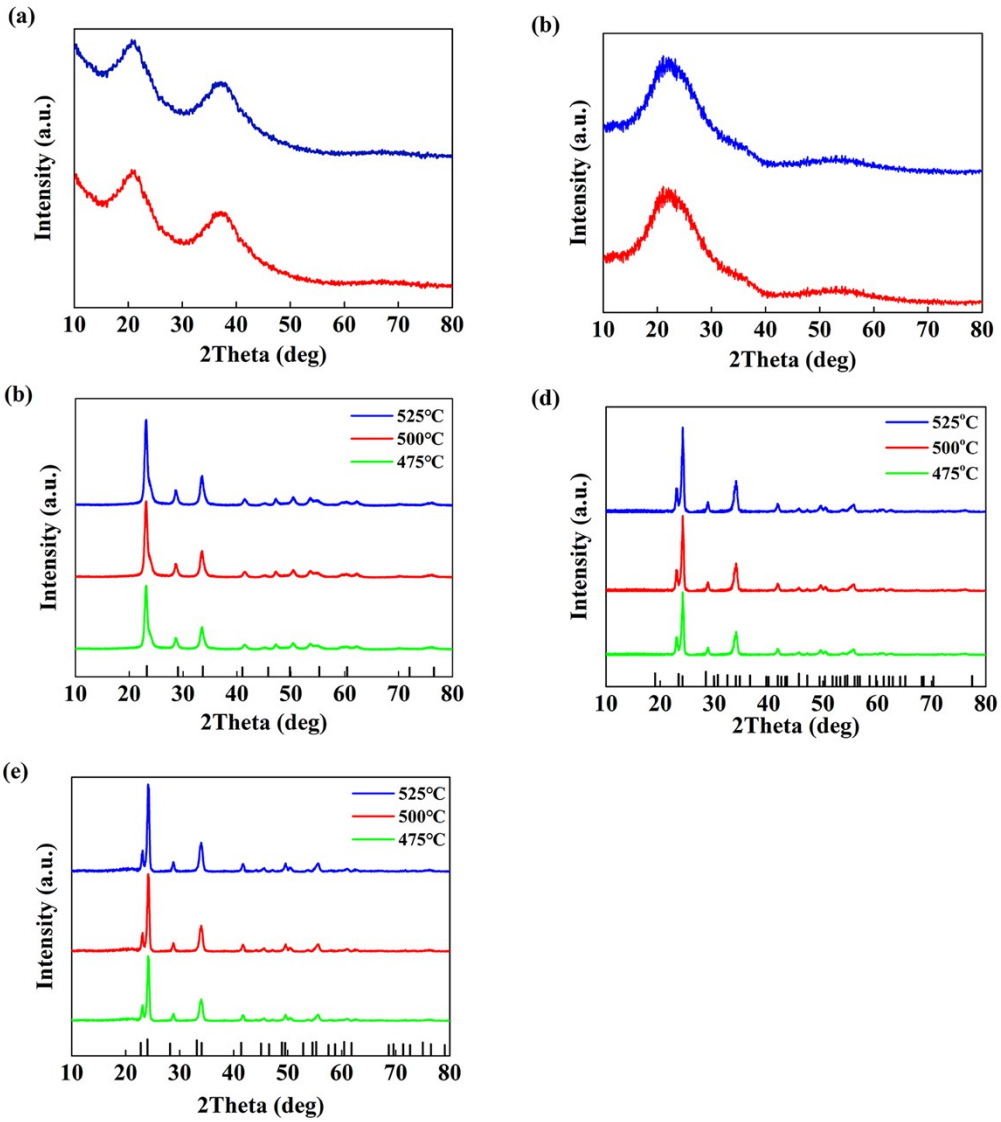

Fig. S1 as-prepared (a)WO_{3-x} films and (b) WO_3 films deposited on glass (red line) and quartz (blue line) before annealing. (c)WO_{3-x} films sputtered on quartz after annealing, the profile of WO_{3-x} (JCPDS file: 53-0434) is listed at the bottom. WO_3 films sputtered on glass (d) and quartz (e) after annealing, the profile of $Na_2W_2O_7$ (JCPDS file: 32-1185) and WO_3 (JCPDS file: 05-0388) are listed at the bottom correspondingly.

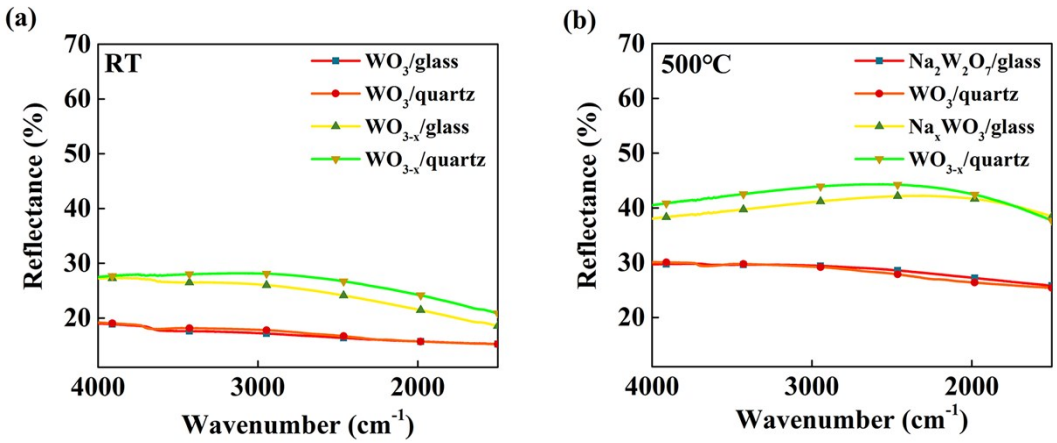

Fig. S2 FTIR spectra of (a) as-prepared samples and Na_xWO_3 film (b) annealed at 500°C.

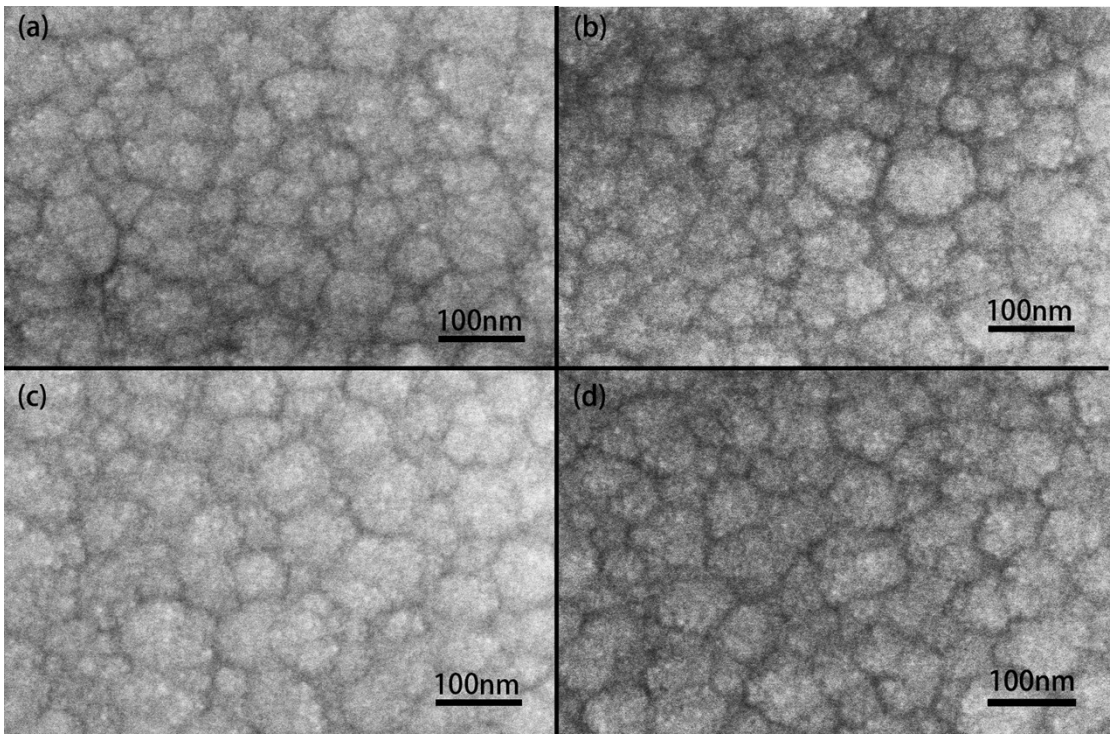

Fig. S3 Top morphology of different samples before annealing (a) WO_{3-x}/BK7, (b) WO_{3-x}/SiO_2, (c)WO_3/BK7, (d)WO_3/SiO_2

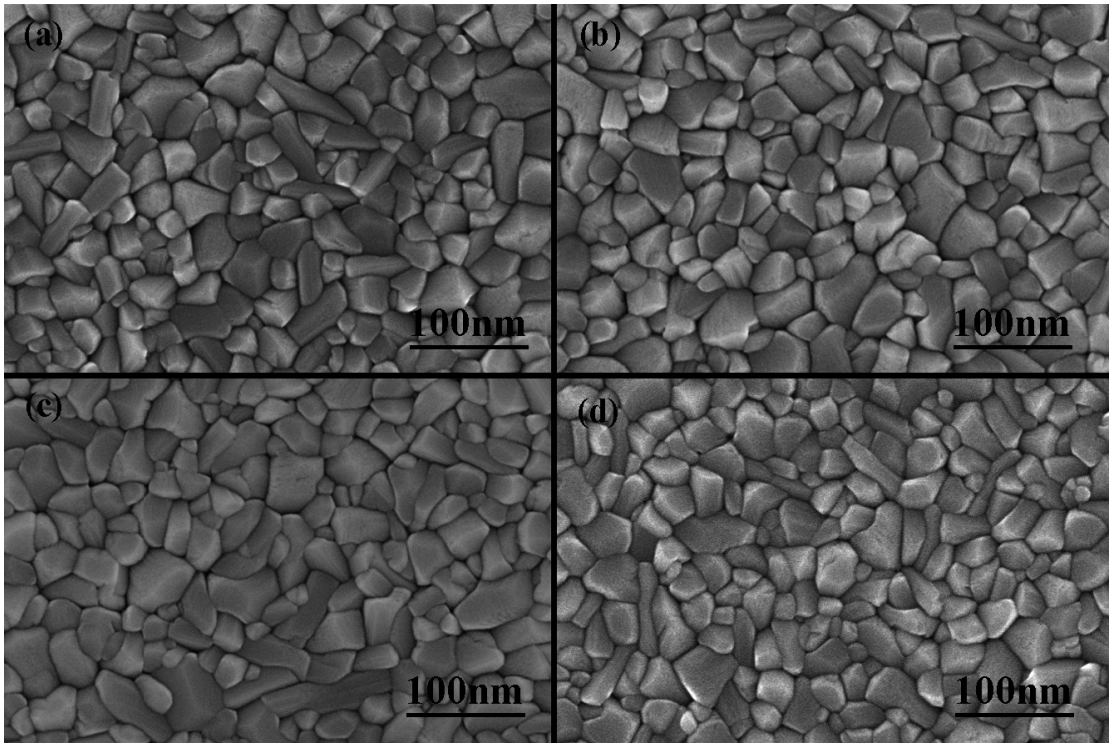

Fig. S4 Top morphology of different samples after 500°C annealing (a) Na_xWO_3/BK7, (b) WO_{3-x}/SiO_2, (c)$Na_2W_2O_7$/BK7, (d)WO_3/SiO_2

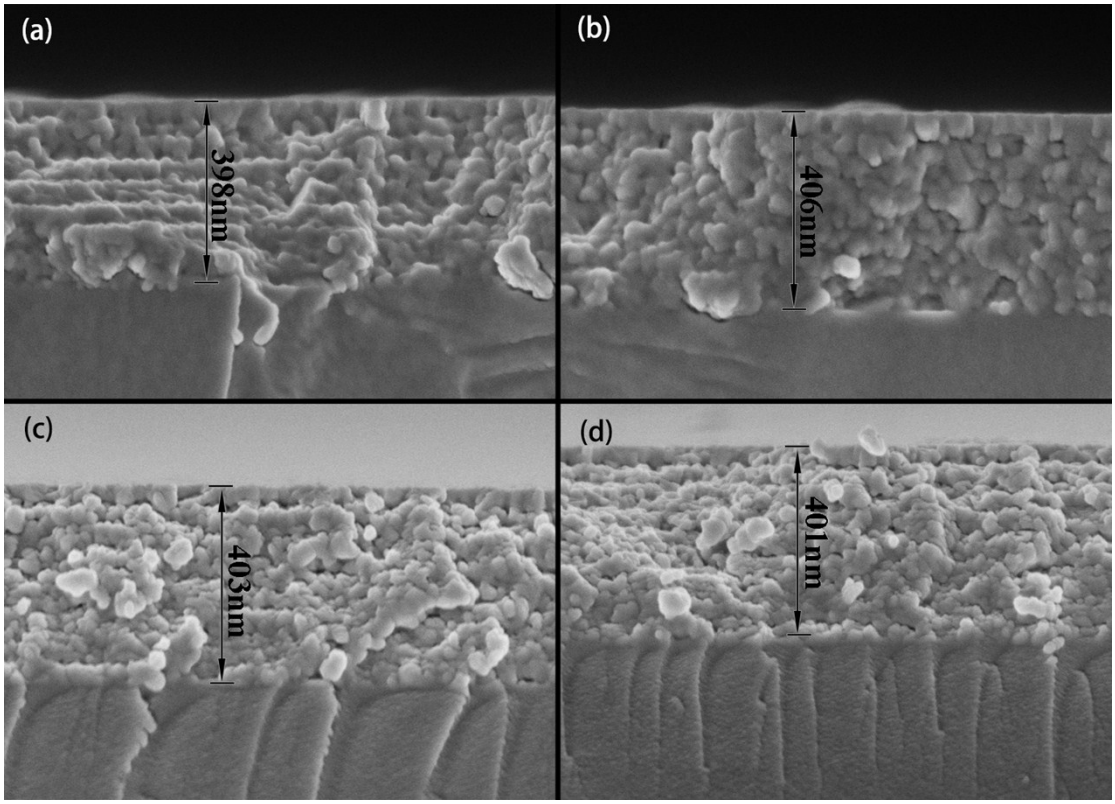

Fig. S5 Cross morphology of different samples after 500°C annealing (a) Na_xWO_3/BK7, (b) WO_{3-x}/SiO_2, (c)$Na_2W_2O_7$/BK7, (d)WO_3/SiO_2

Table S1. XPS Peaks

Peak	Energy
C1s	285
N1s	400
W4f	36.5
W4d5	248
W4d3	260
W4p3	428
Energy Loss Peak	448
W4p1	495
Na1s	1072.7
O1s	531
OKL1*	970

* Auger Peak