

**Supplementary Information File for
Radiochromism in Nb-Sensitized WO₃ as Instant and Cumulative
X-ray Dose Recorder**

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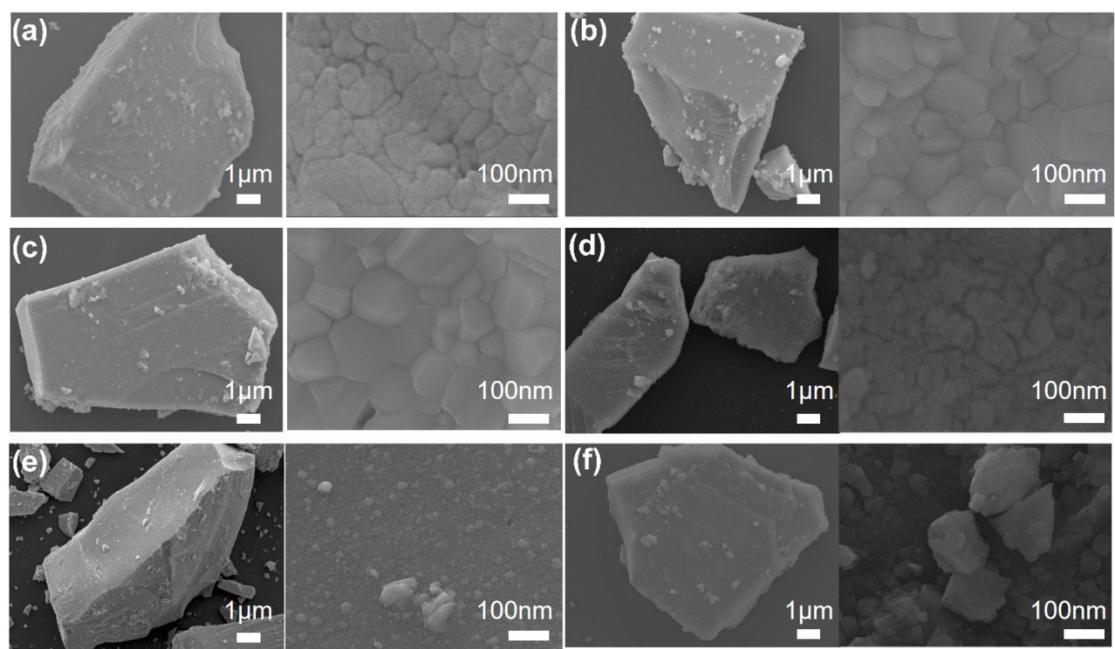


Figure S1. SEM graphs of (a) WO₃, (b) Nb_{0.01}W_{0.99}O₃, (c) Nb_{0.03}W_{0.967}O₃, (d) Nb_{0.05}W_{0.95}O₃, (e) Nb_{0.075}W_{0.925}O₃, (f) Nb_{0.09}W_{0.91}O₃.

Table S1. Peak positions of Raman vibration modes of as-prepared and after radiochromic $\text{Nb}_x\text{W}_{1-x}\text{O}_3$ samples.

As-prepared $\text{Nb}_x\text{W}_{1-x}\text{O}_3$	x=0	x=0.01	x=0.03	x=0.05	x=0.075	x=0.09
v1 (cm^{-1})	87.9	86.2	89.9	89.9	86.2	82.5
v2 (cm^{-1})	133.2	131.7	138.6	139.1	124.3	117.3
v3 (cm^{-1})	271.5	270.3	268.4	266.6	266.6	261.0
v4 (cm^{-1})	328.8	326.9	303.2	301.4	—	—
v5 (cm^{-1})	716.8	716.8	680.4	680.4	689.6	691.5
v6 (cm^{-1})	807.0	807.0	807.0	803.8	794.9	791.9
Radiochromic $\text{Nb}_x\text{W}_{1-x}\text{O}_3$	x=0	x=0.01	x=0.03	x=0.05	x=0.075	x=0.09
v1 (cm^{-1})	84.2	84.2	87.9	86.2	86.0	85.7
v2 (cm^{-1})	133.7	133.7	141.1	141.1	126.2	122.8
v3 (cm^{-1})	273.0	273.0	267.4	269.2	269.2	265.5
v4 (cm^{-1})	716.8	712.3	675.6	679.4	688.7	694.0
v5 (cm^{-1})	807.0	805.6	805.6	802.2	794.7	791.0

^a Sing of “—” indicate no corresponding vibration mode in the Raman spectra.

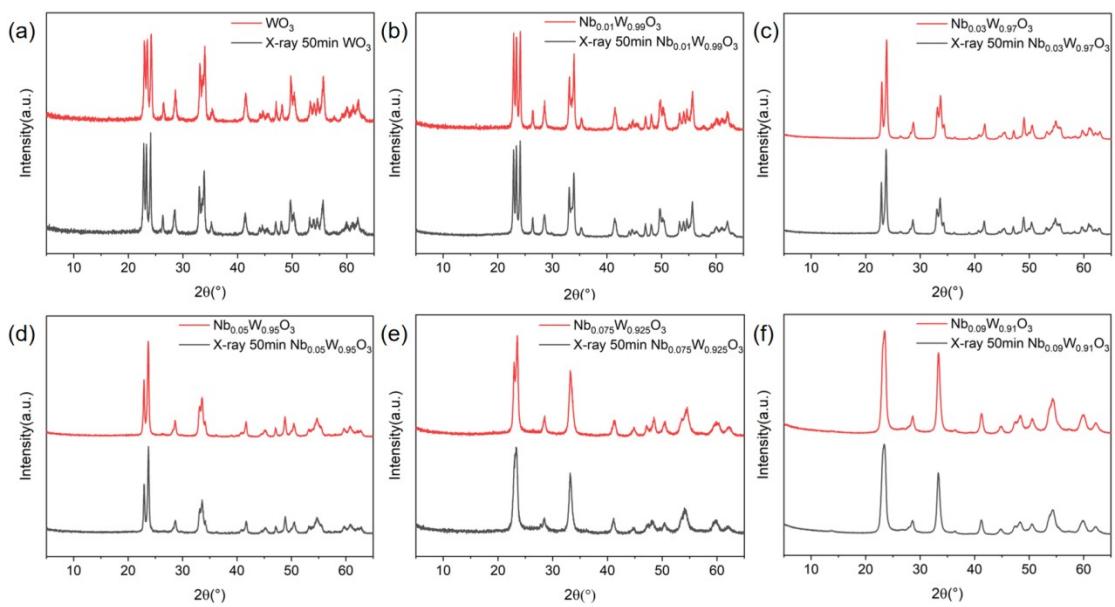


Figure S2. Comparison of the XRD data of the samples of (a) WO_3 , (b) $\text{Nb}_{0.01}\text{W}_{0.99}\text{O}_3$, (c) $\text{Nb}_{0.03}\text{W}_{0.97}\text{O}_3$, (d) $\text{Nb}_{0.05}\text{W}_{0.95}\text{O}_3$, (e) $\text{Nb}_{0.075}\text{W}_{0.925}\text{O}_3$, (f) $\text{Nb}_{0.09}\text{W}_{0.91}\text{O}_3$, with that of x-ray radiated for 50 min at room temperature.