Supporting Information for:

Efficient Plasma-Route to Nanostructure Materials:

Case Study on m-WO$_3$ for Solar Water Splitting

Moreno de Respinis$^1$, Gregory De Temmerman$^2$, Irem Tanyeli$^2$, Mauritius C.M. van de Sanden$^2$, Russ P. Doerner$^3$, Matthew J. Baldwin$^3$, Roel van de Krol$^{1,4}$

1 Delft University of Technology, Faculty of Applied Sciences, Department of Chemical Engineering, Materials for Energy Conversion and Storage, P.O. Box 5045, 2600GA Delft, The Netherlands

2 FOM-Institute DIFFER, Dutch Institute For Fundamental Energy Research, PO Box 1207, 3430 BE Nieuwegein, The Netherlands

3 Centre for Energy Research, University of California at San Diego, 9500 Gilman Drive, La Jolla, USA

4 Helmholtz-Zentrum Berlin für Materialien und Energie Gmbh, Institute for Solar Fuels, Hahn-Meitner-Platz 1, 14109 Berlin, Germany

*To whom correspondence should be addressed: E-mail M.deRespinis@TUDelft.nl;
Figure S1. XRD of polished WO$_x$ annealed at 550/450°C (green) – porous WO$_x$ annealed at 550°C (red) – porous WO$_3$ annealed at 550/450°C (blue) – polished WO$_3$ annealed at 700°C (olive). During thermal anneal, the nanostructured tungsten is first converted into oxygen deficient WO$_3$-$X$, and then fully oxidized into WO$_3$. The latter process remains incomplete in the case of the polished samples. (International Centre for Diffraction Data (JCPDS) reference files; W: PCPDF 04-0806; WO$_3$: PCPDF 83-0948)

Figure S2. Cross section SEM image of tungsten target plasma-processed at 1500°C.