Supplementary Information

Supplementary 1. Ti 2p XPS scan

Supplementary 2. O 1s XPS scan, where the peak at lower binding energy is from TiO₂ and the small peak at ~532 eV can be attributed to organic contamination on the surface of the substrate

Supplementary 3. B 1s XPS scans for boron doped TiO₂ deposited at 500 °C (left) and 600 °C (right)
**Supplementary 4.** Sacrificial hydrogen evolution of best performing sample over a period of 4 hours

**Supplementary 5.** Sacrificial oxygen evolution of best performing B-TiO$_2$ deposited at a) 550 °C and b) 600 °C over three cycles with arrows indicating the light being turned on, off as well as the argon purge

**Supplementary 6.** UV-vis of B-TiO$_2$ samples deposited on glass