

Supporting Information

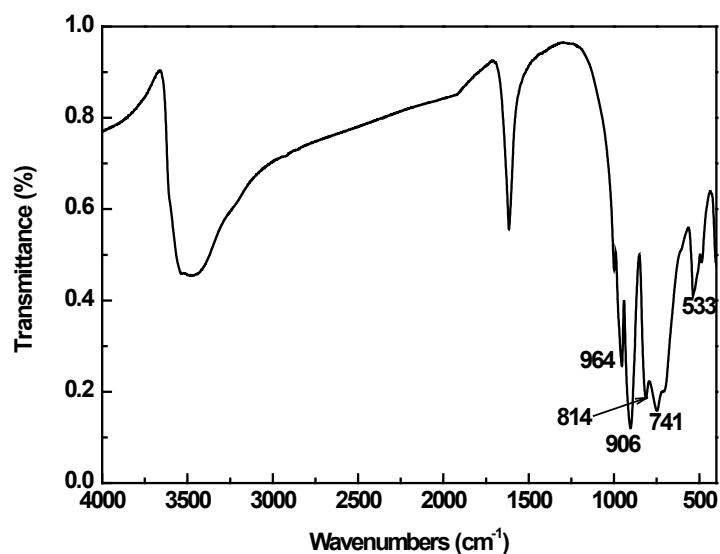


Figure S1. FT-IR spectrum of $\text{K}_6\text{SiW}_{11}\text{O}_{39}\text{Co(II)}$

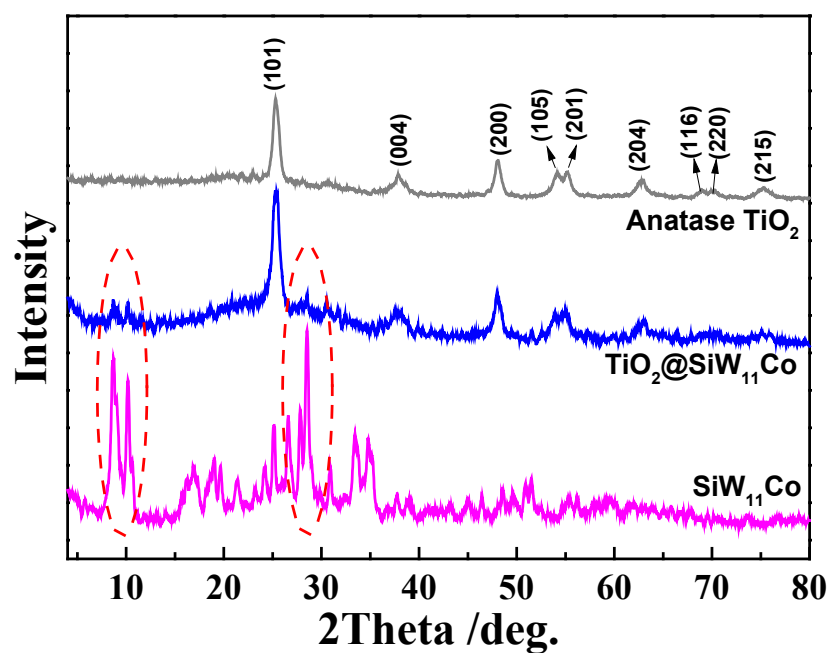


Figure S2. XRD of $\text{TiO}_2@\text{SiW}_{11}\text{Co}$, SiW_{11}Co and anatase TiO_2 .

XRD was carried out to investigate the changes of TiO_2 phase structure after loaded on the surface of SiW_{11}Co . **Figure S2** is the XRD pattern of pure TiO_2 sample, SiW_{11}Co before loading and $\text{TiO}_2@\text{SiW}_{11}\text{Co}$. It shows that, in both pure TiO_2 and $\text{TiO}_2@\text{SiW}_{11}\text{Co}$, nine characteristic peaks are observed at 25.4°, 37.9°, 48.1°, 54.2°, 55.2°, 62.8°, 69.0°, 70.1° and 75.4°. All the peak positions were in agreement with

those of anatase TiO_2 and no peak of brookite or rutile TiO_2 was found in the pattern. It shows that after loaded on the surface of SiW_{11}Co didn't affect the crystal phase structure of TiO_2 . And for $\text{TiO}_2@\text{SiW}_{11}\text{Co}$ sample, three weak peak can be found at *ca.* 8.8° , 10.1° and 28.53° , which agrees with the typical peaks of SiW_{11}Co .

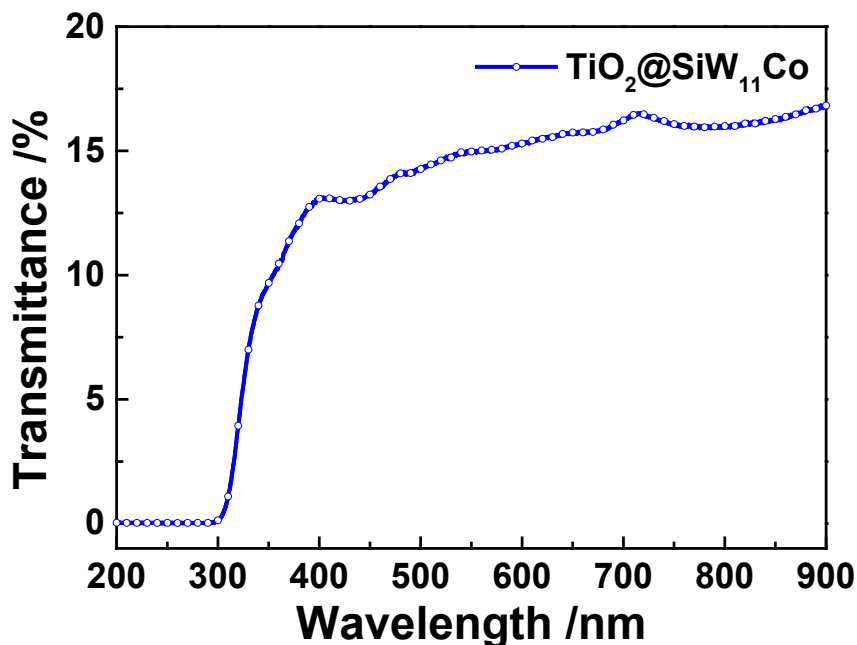


Figure S3 Optical transmittance spectra of $\text{TiO}_2@\text{SiW}_{11}\text{Co}$ thin films.

Figure S3 shows the typical transmittance spectra of $\text{TiO}_2@\text{SiW}_{11}\text{Co}$ thin film over spectral region of 200-900 nm. $\text{TiO}_2@\text{SiW}_{11}\text{Co}$ thin film shows ~15% transmittance in NIR region. However, due to the absorption of SiW_{11}Co (Figure 2), the transmittance in visible falls to ~12%. And in UV region, TiO_2 on the surface of SiW_{11}Co absorb the UV light strongly, and the film is hardly transparent with a transmittance below 1%.

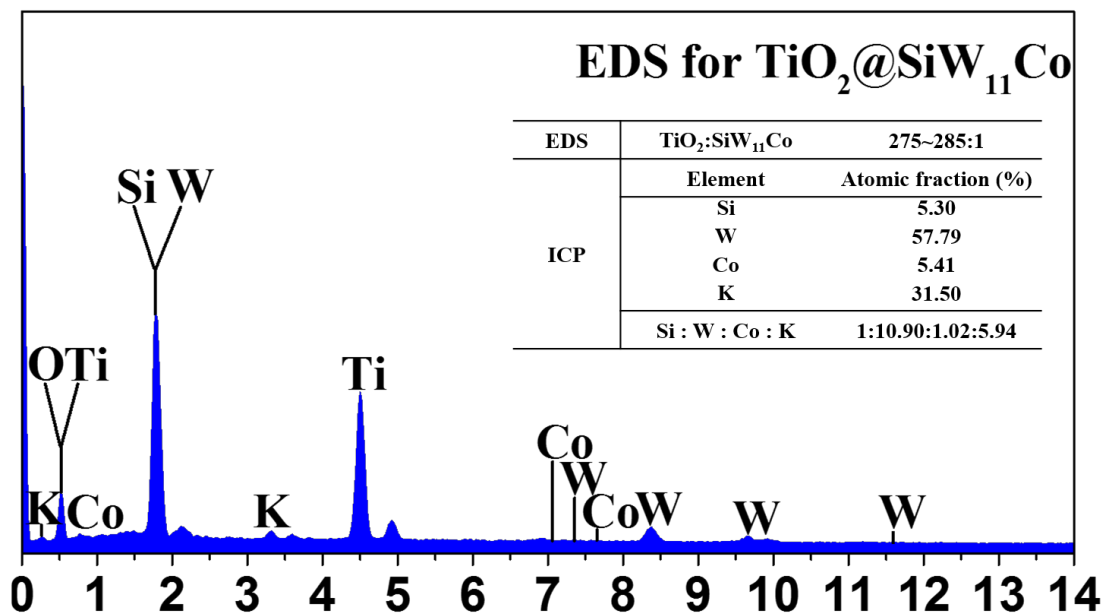


Figure S4 EDS of $\text{TiO}_2@\text{SiW}_{11}\text{Co}$ powder with the atomic fraction table as inset

Figure S4 shows the EDS of $\text{TiO}_2@\text{SiW}_{11}\text{Co}$ and the atomic fraction. In **Figure S4**, K, Si, W, Co, Ti and O element can be observed. According to EDS, the ratio of TiO_2 : SiW_{11}Co is around 275~285:1.