

## SUPPLEMENTARY INFORMATIONS

### **Fabrication of a free-standing $Ti_3C_2T_x$ -PTh counter electrode via interfacial polymerization for dye-sensitized solar cells**

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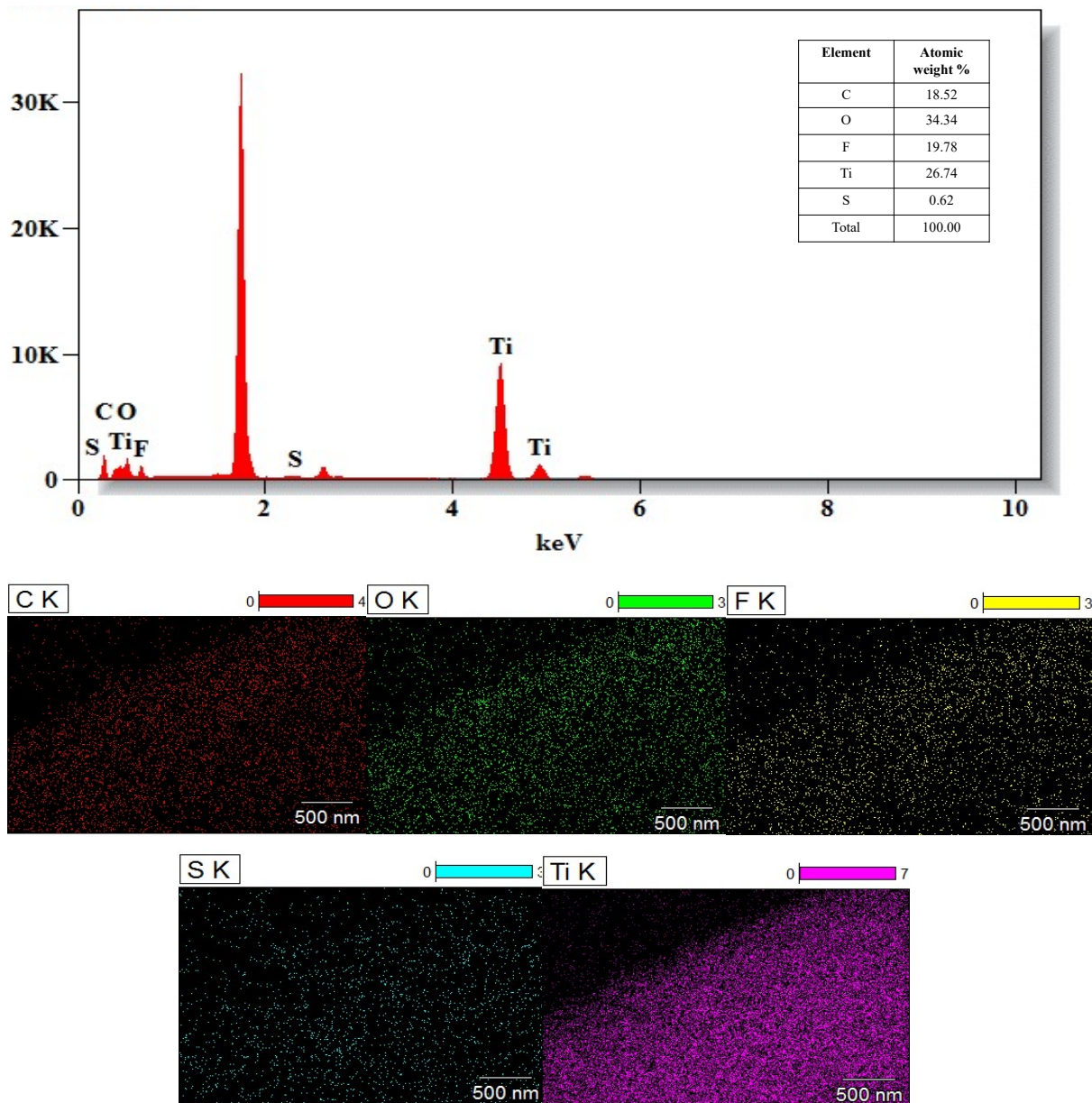


Fig S1. EDS spectrum and elemental mapping of  $Ti_3C_2T_x$ -PTh

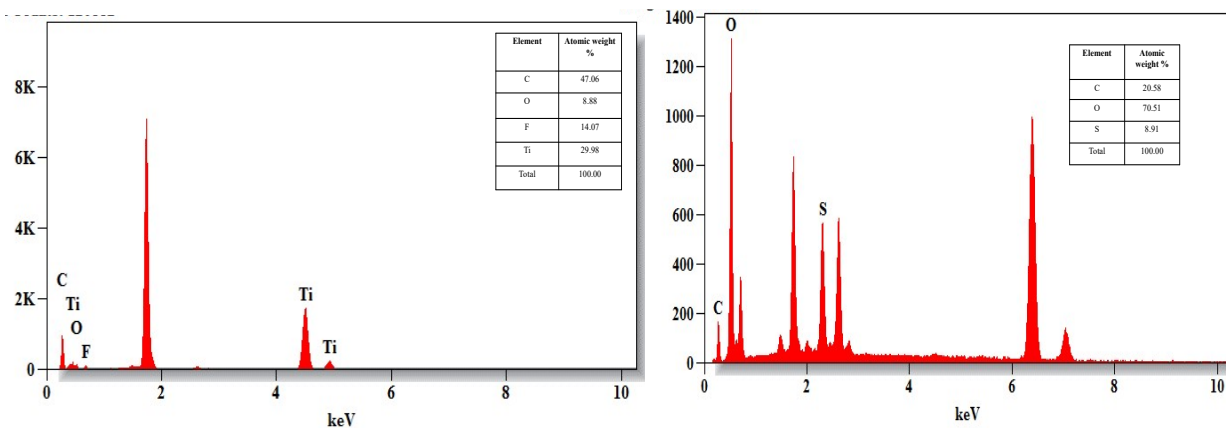


Fig S2. EDS spectrum of pristine PTh and  $Ti_3C_2T_x$

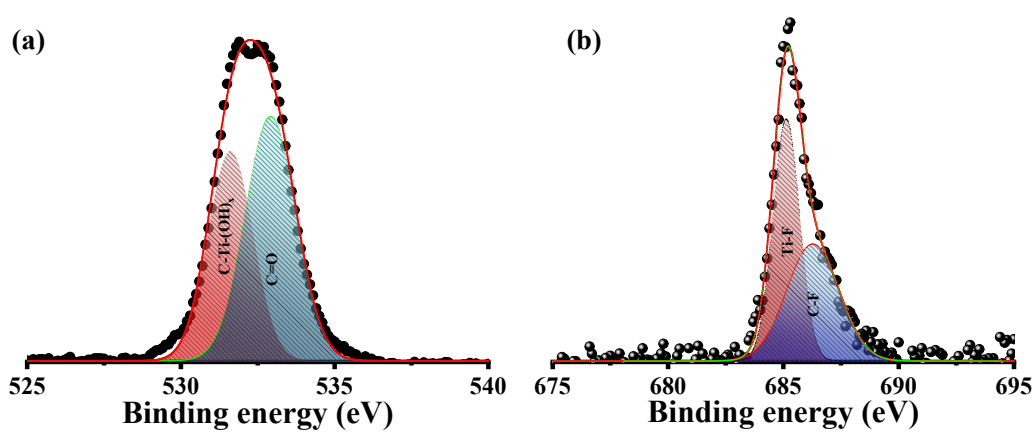


Fig S3. XPS patterns of (a) O 1s and (b) F 1s

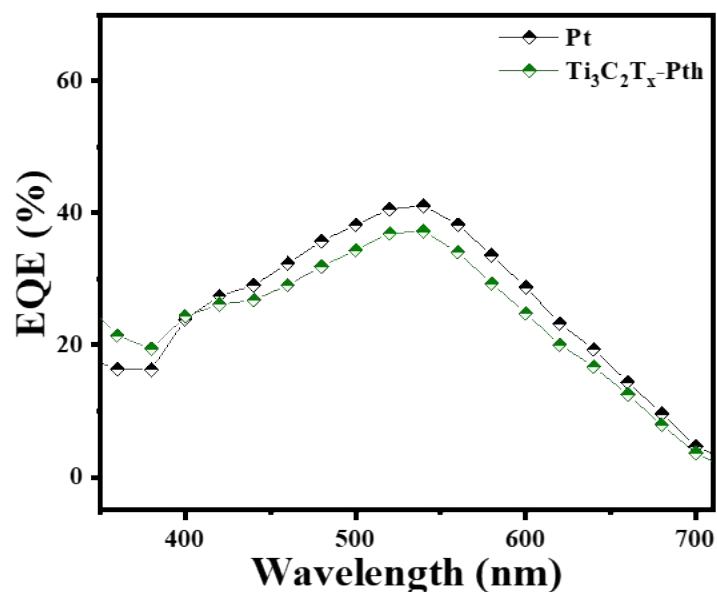


Fig S4. EQE of DSSCs with Pt and  $Ti_3C_2T_x$ -Pth CEs