Supplementary Materials

V-porphyrins encapsulated or supported on siliceous materials: synthesis characterization and photoelectrochemical properties

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Figure S1. Scheme of the synthesis of mesoporous SBA-15.

Figure S2. **20VP@SBA** sample: a) after filtered and washed; b) after dried at 60 ºC overnight.

Figure S3. Structure of both a mesoporous SBA-15 materials and VTPP, as well as VTPP encapsulated on mesoporous material.

Figure S4. XRD patterns of catalysts: a) Pure VTPP; b) SiO_2-supported VTPP catalysts (with a 20wt% of VTPP).

Figure S5. Nitrogen adsorption isotherms (A) and desorption (B) of: a) support (mesoporous materials, after calcination at 500ºC); b) 20VTPP@SBA catalyst. Characteristics in Table 1.

Figure S6. A) FTIR spectra of support and catalysts: a) SBA-15; b) 20VTPP@SBA; c) 20VTPP/SiO_2; d) Pure VTPP. B) FTIR spectra in the 3750-2750 cm^{-1} region. C) FTIR spectra in the 200-500 cm^{-1} region.

Figure S7. Diffuse Reflectance (UV-vis) spectra of pure **VTPP** (as received) and **VTPP** diluted in CH_2Cl_2 (3 mg VPTT/30g CH_2Cl_2).

Figure S8. Diffuse Reflectance (UV-vis) spectra of SiO_2-supported VTPP catalysts, with VTPP contents of: a) 20 wt.% of VTPP; b) 10 wt.% of VTPP; c) 5 wt.% of VTPP.

Figure S9. EPR spectra of pure **VTPP** and **20VP@SBA** catalysts.

Figure S1. Scheme of the synthesis of mesoporous SBA-15.

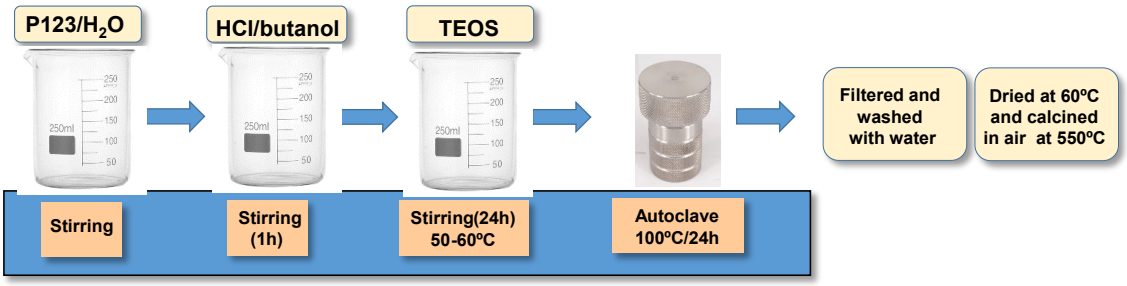


Figure S2. **20VP@SBA** sample: a) after filtered and washed; b) after dried at 60 ºC overnight.

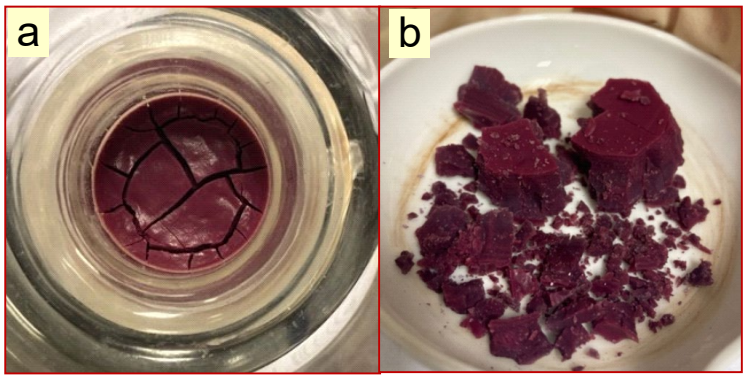
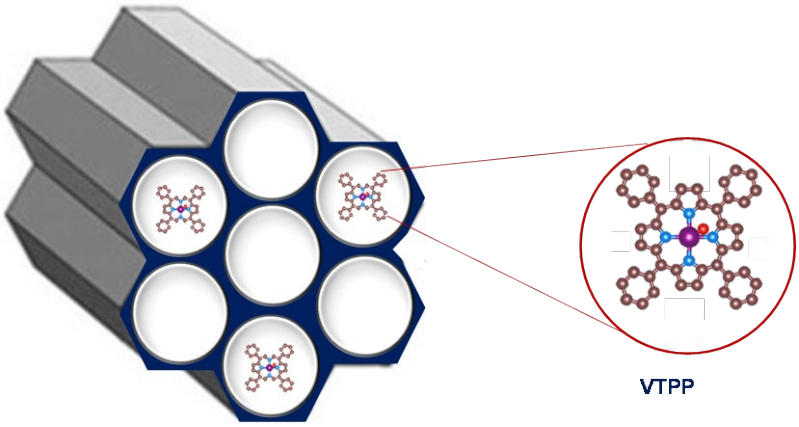


Figure S3. Structure of both a mesoporous SBA-15 materials and VTPP, as well as VTPP encapsulated on mesoporous material.



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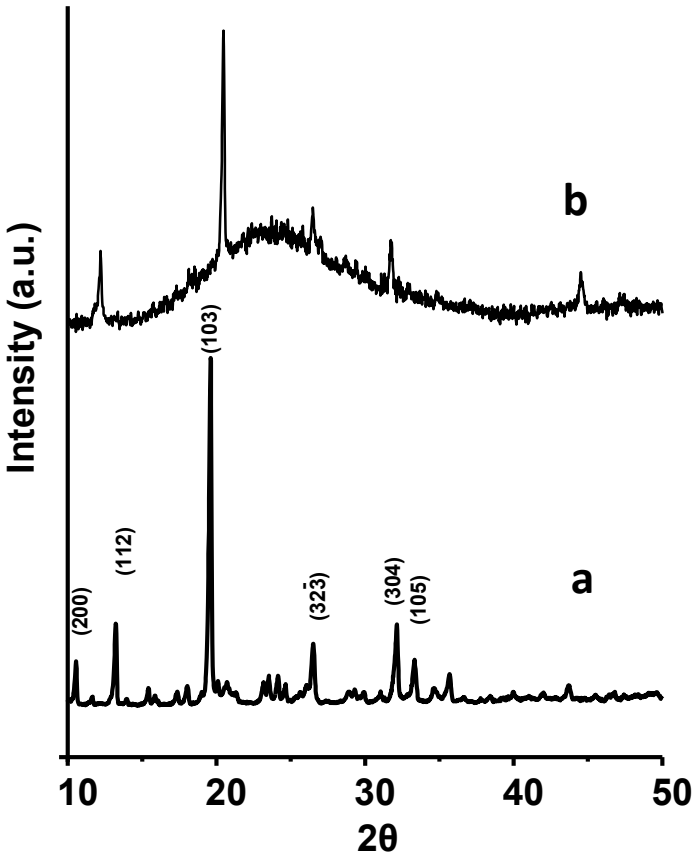
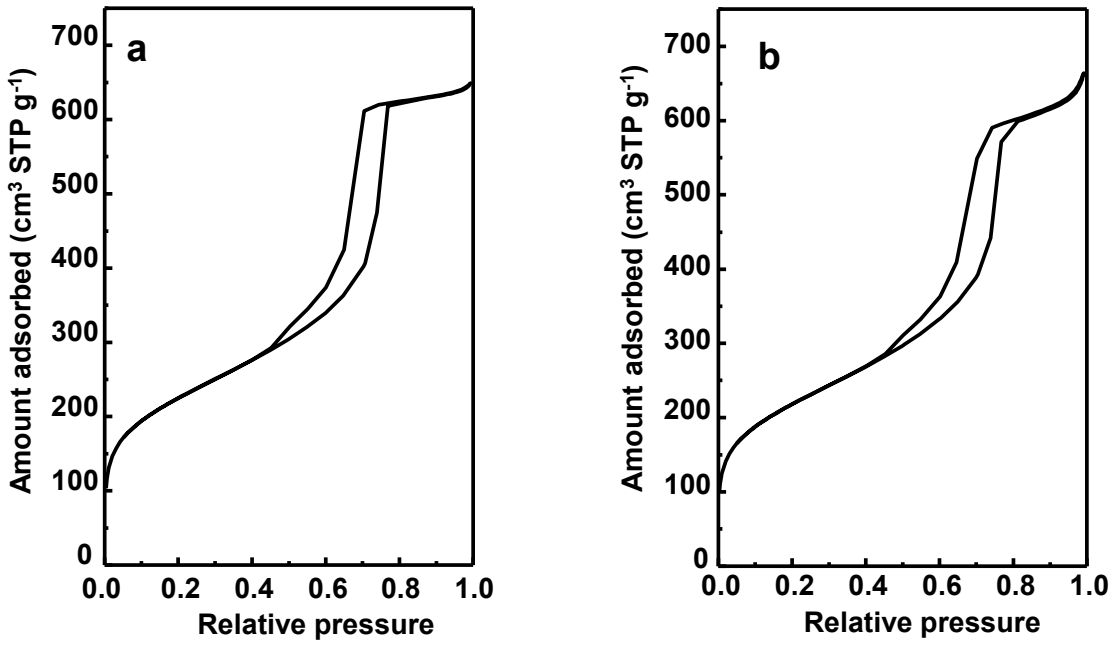


Figure S5. Nitrogen adsorption isotherms and desorption of: a) SBA-15 support (mesoporous materials, after calcination at 500ºC); b) Nb-containing SBA-15 support (mesoporous materials, after calcination at 500ºC).



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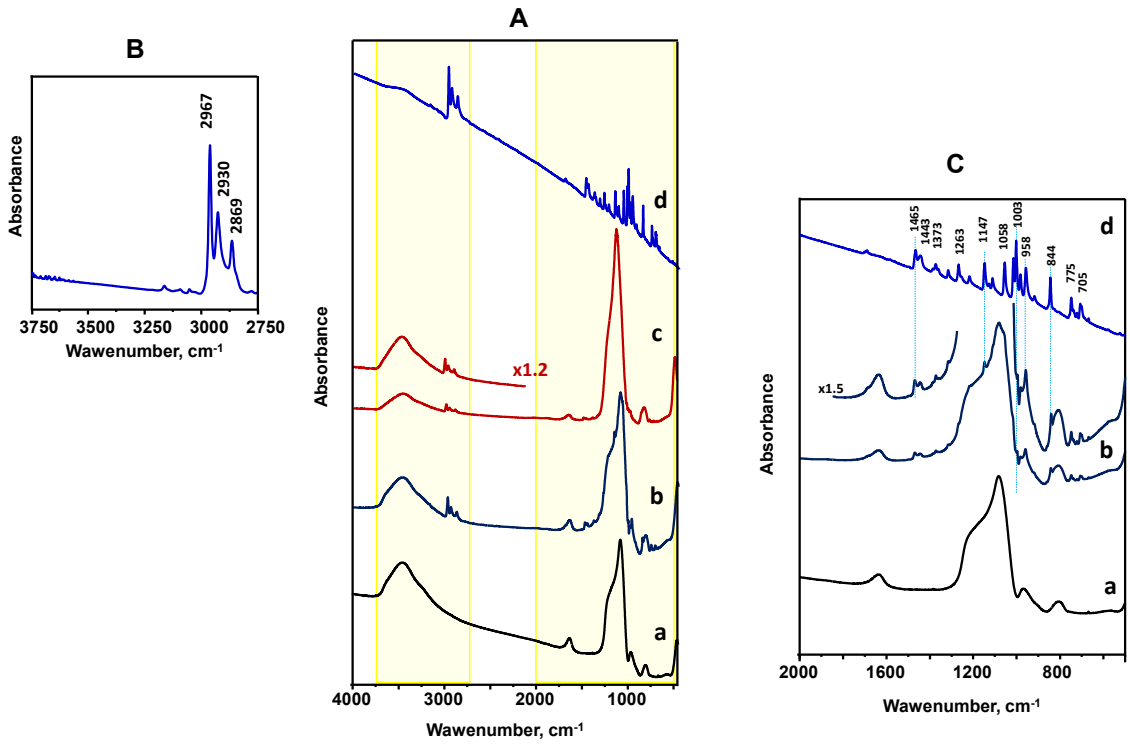

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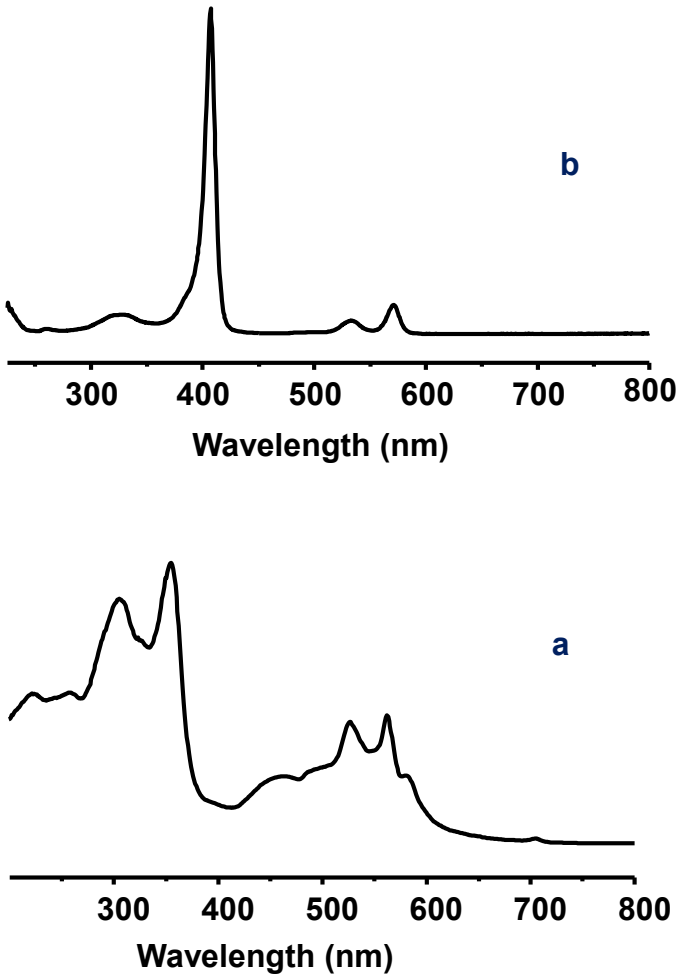

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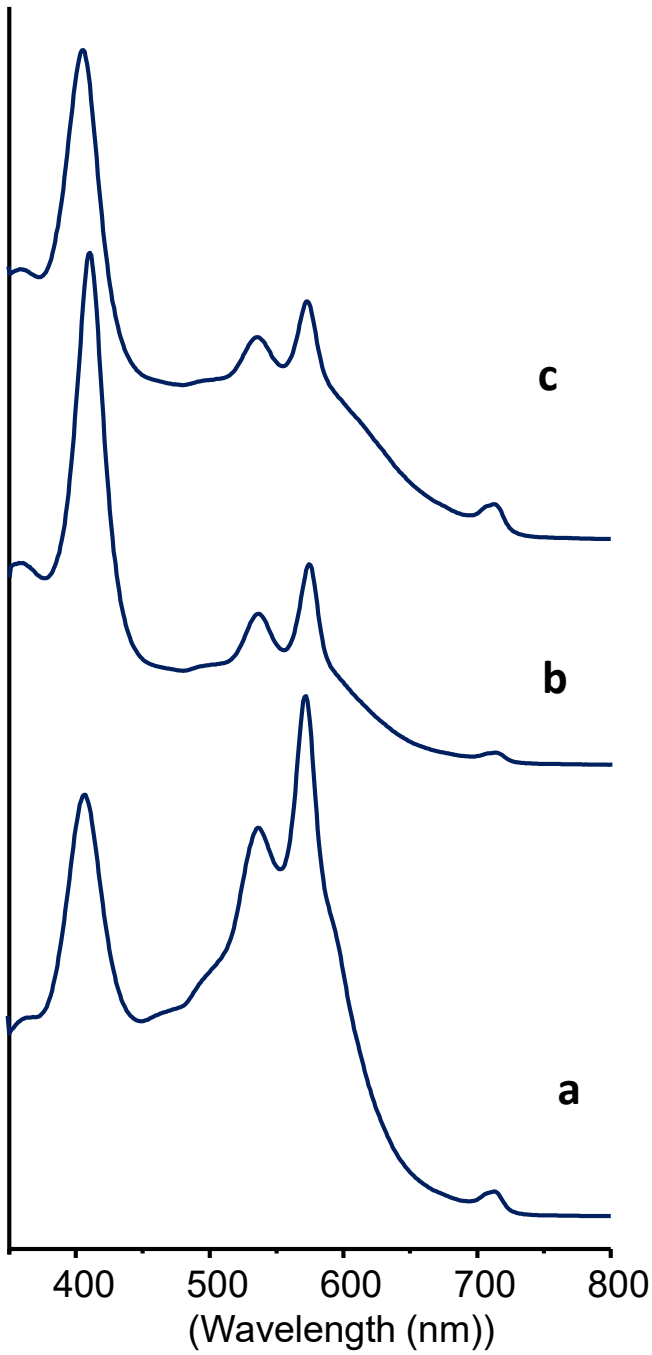
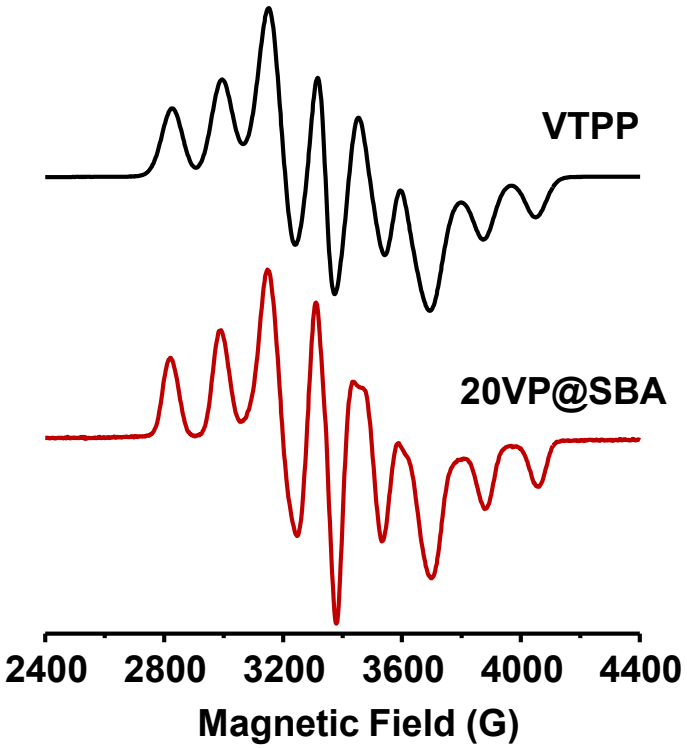
Figure S9. EPR spectra of pure **VTPP** and **20VP@SBA** catalysts.