Electronic Supplementary Material (ESI) for RSC Advances.

Highly enhanced electrocatalytic OER activity of water coordinated copper complexes: Effect of lattice water and bridging ligand

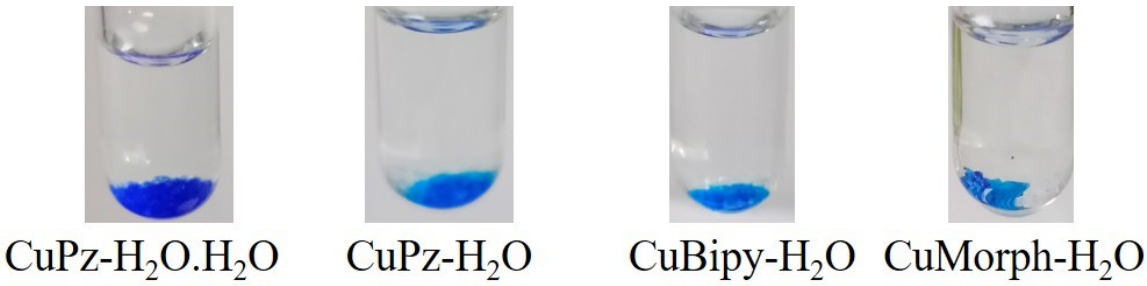

Figure S1. Digital images of copper complex crystals in ethanol.

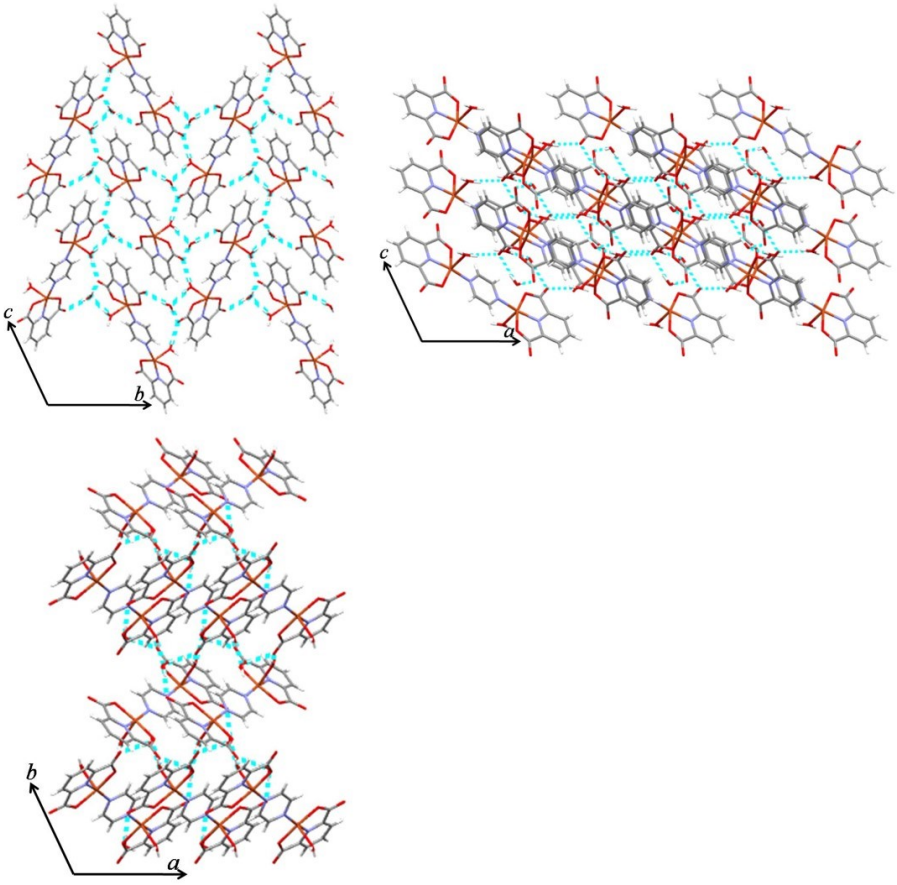

Figure S2. Molecular packing in the crystal lattice of **CuPz-$H_2O.H_2O$**. C (grey), H (white), N (blue), O (red) and Cu (brown). C (grey), H (white), N (blue), O (red) and Cu (brown). Dotted lines indicate the hydrogen bonding interactions. H-bond distances ranged between 2.733 and 2.980 Å.

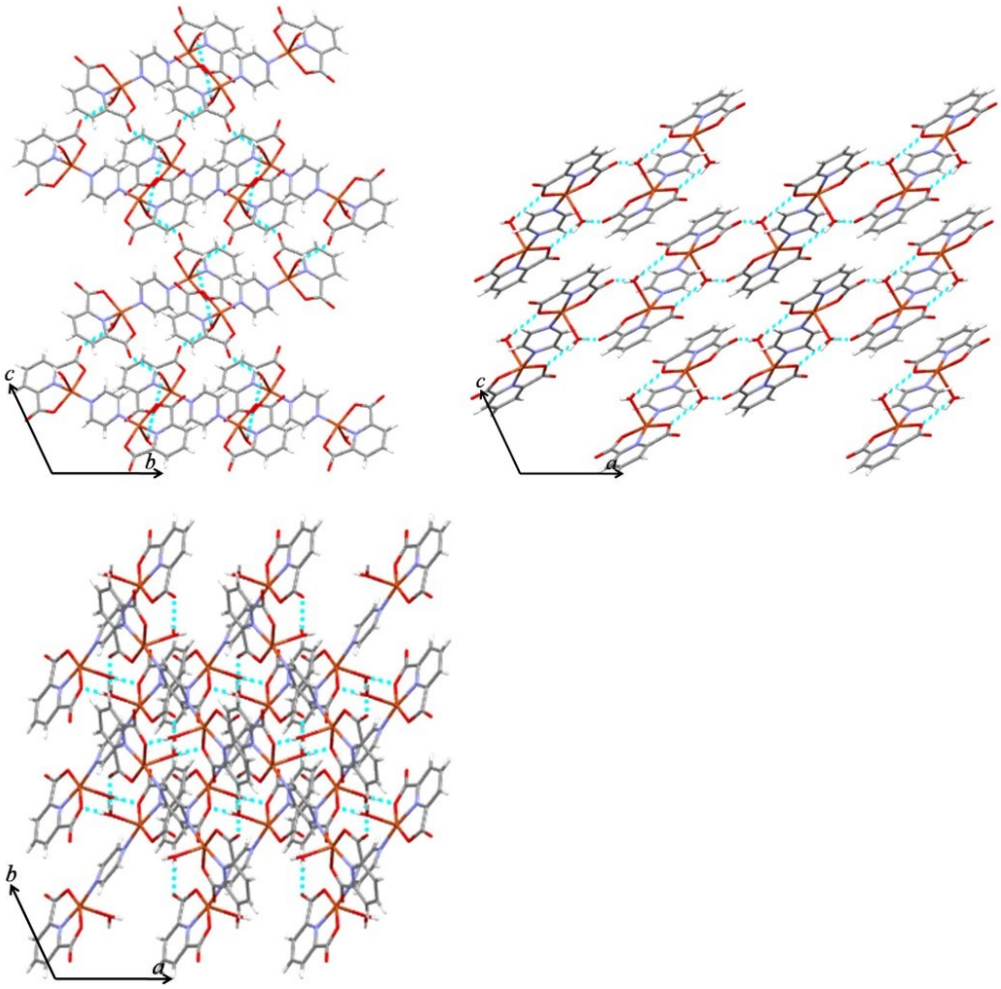

Figure S3. Molecular packing in the crystal lattice of **CuPz-H_2O.** C (grey), H (white), N (blue), O (red) and Cu (brown). C (grey), H (white), N (blue), O (red) and Cu (brown). Dotted lines indicate the hydrogen bonding interactions. H-bond distances ranged between 2.733 and 2.980 Å.

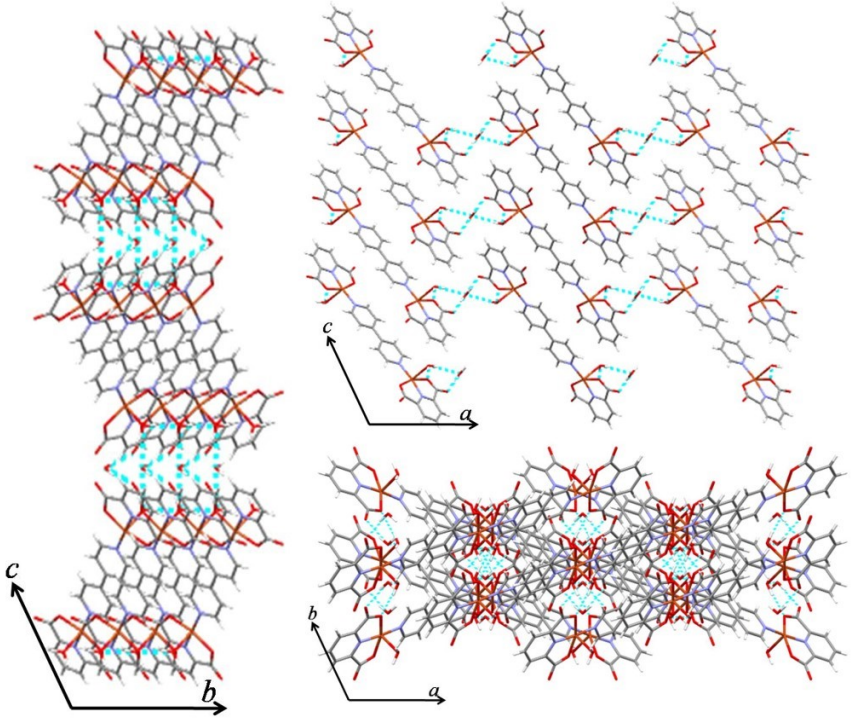

Figure S4. Molecular packing in the crystal lattice of **CuBipy-H_2O.H_2O**. C (grey), H (white), N (blue), O (red) and Cu (brown). C (grey), H (white), N (blue), O (red) and Cu (brown). Dotted lines indicate the hydrogen bonding interactions. H-bond distances ranged between 2.733 and 2.980 Å.

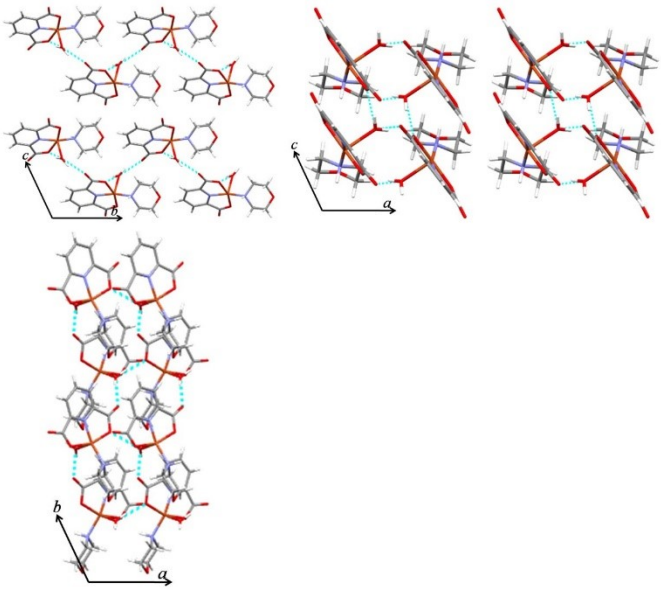

Figure S5. Molecular packing in the crystal lattice of **CuMorph-H_2O**. C (grey), H (white), N (blue), O (red) and Cu (brown). C (grey), H (white), N (blue), O (red) and Cu (brown). Dotted lines indicate the hydrogen bonding interactions. H-bond distances ranged between 2.733 and 2.980 Å.

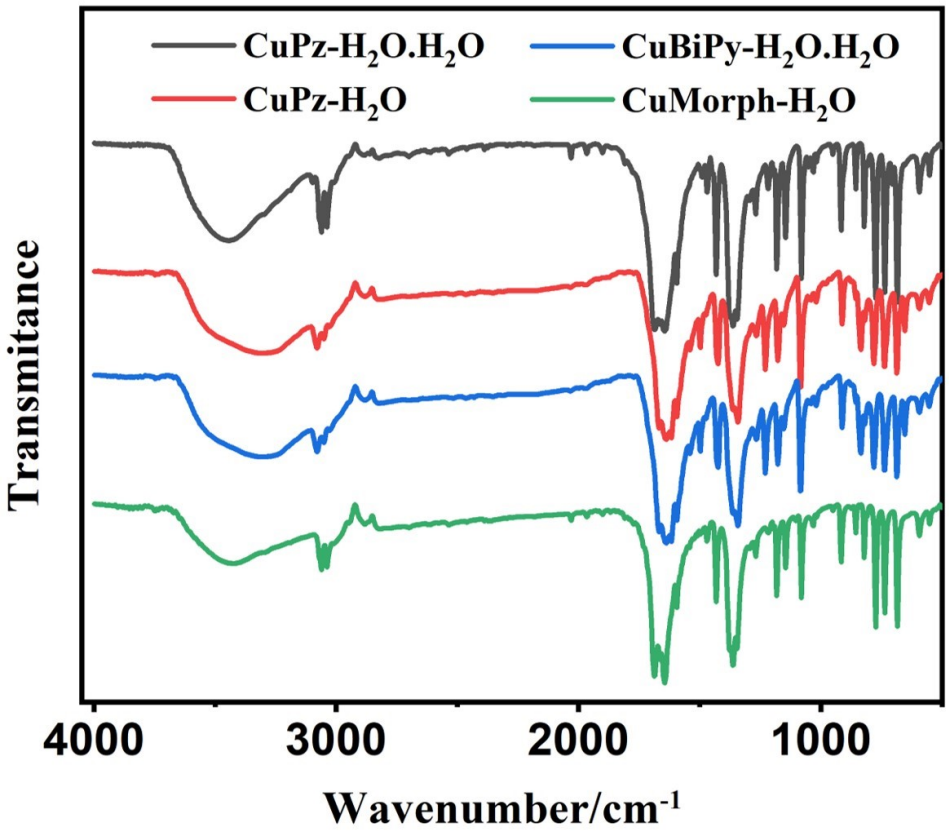

Figure S6. FTIR spectra of copper complexes.

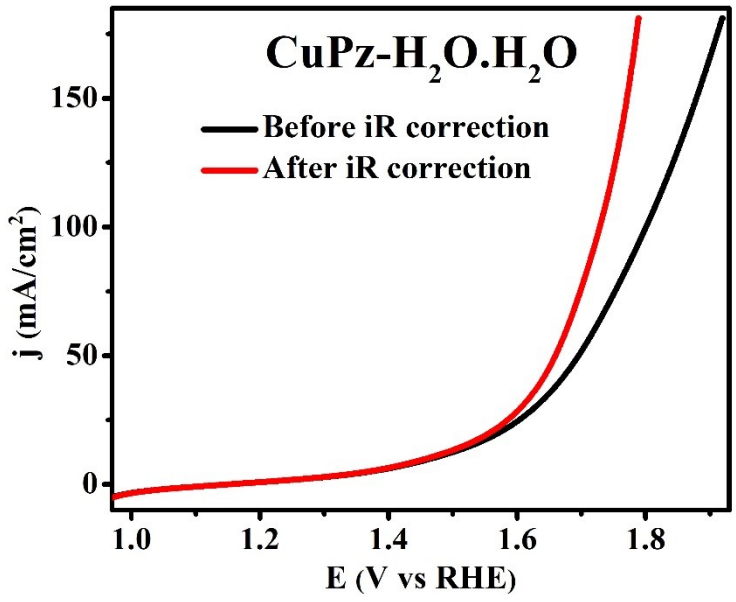

Figure S7. OER polarization curves of **CuPz-$H_2O.H_2O$** before and after iR correction.

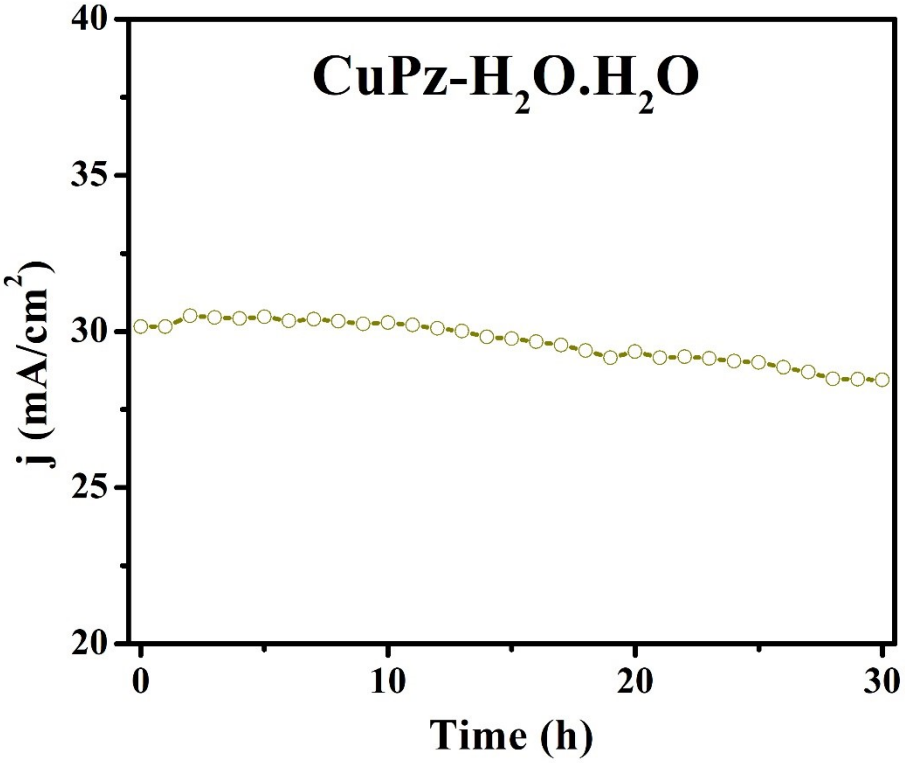

Figure S8. The current-time amperometric test performed at 30 mA/cm^2.

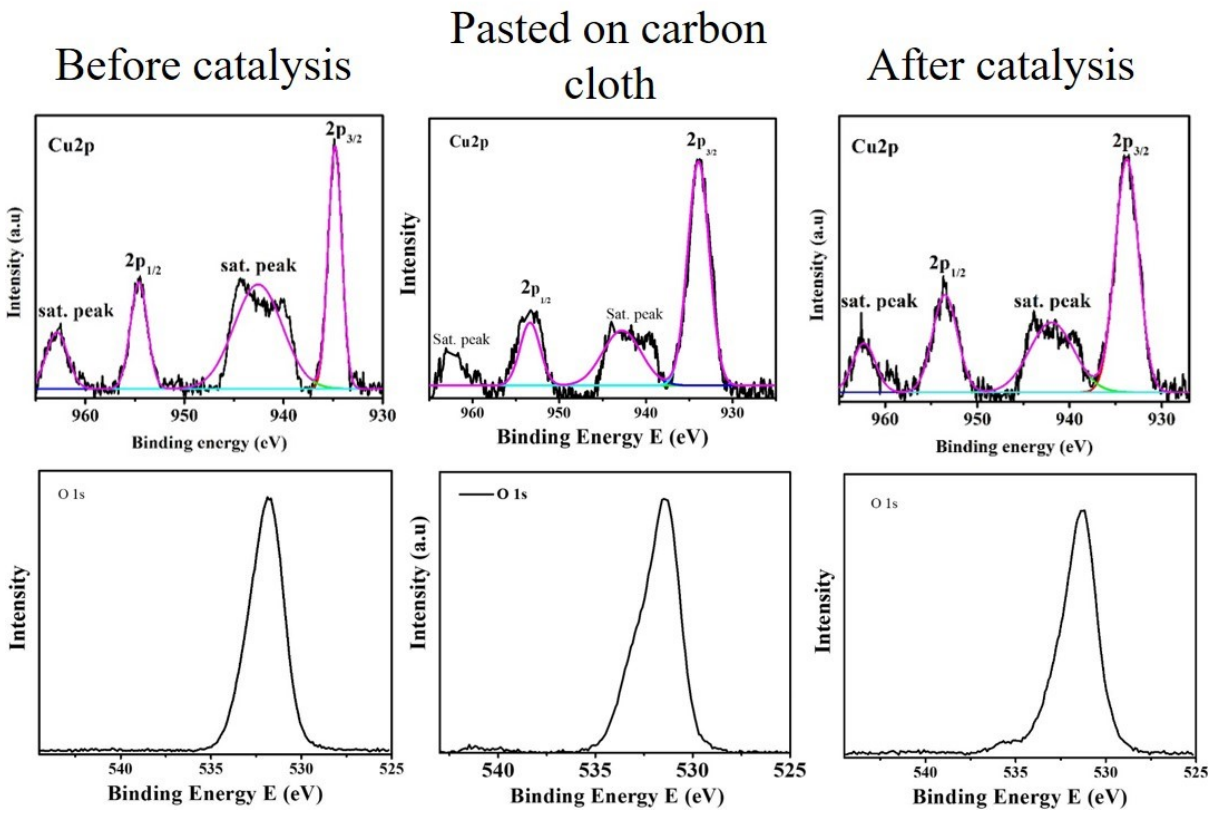

Figure S9. High resolution XPS spectra of Cu 2p and O 1s of **CuPz-$H_2O.H_2O$.**

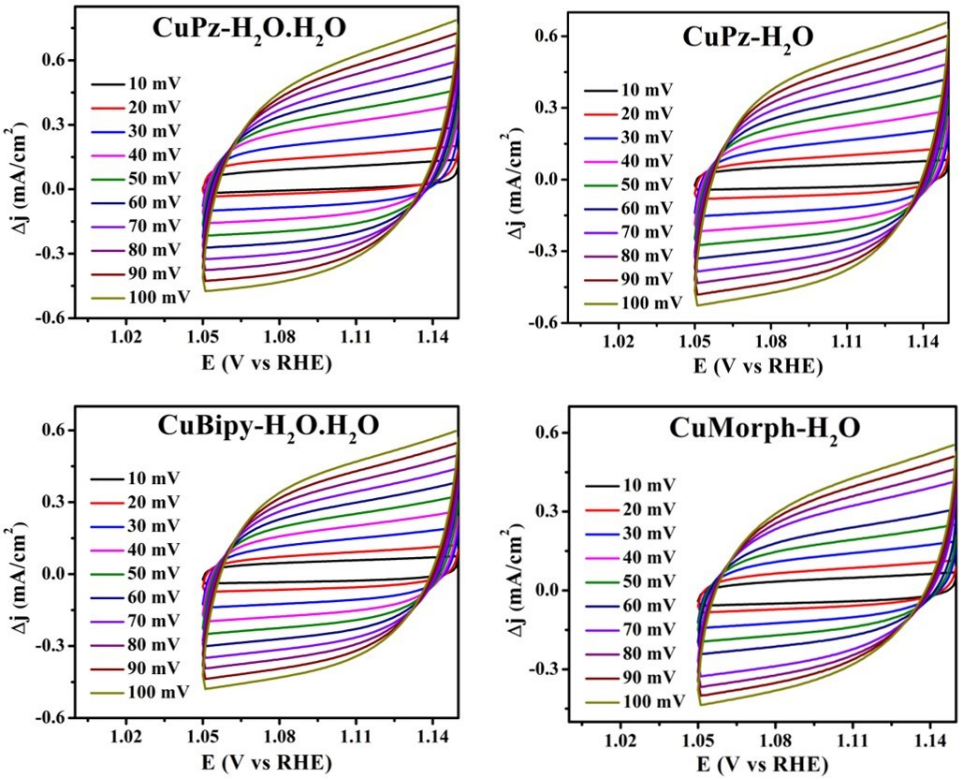

Figure S10. Double layer capacitance and capacitive currents as a functional of scan rate.