## **Supporting Information**

## Iridium Nanotubes as Bifunctional Electrocatalysts for Oxygen Evolution and Nitrate Reduction Reactions

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Scheme S1. The molecular structure of HEDP.



**Figure S1.** Absolute calibration of the phenate method using ammonium solutions of known concentration as standards. (A) UV-Vis curves of phenate assays after in darkness for 3 hours at room temperature, (B) calibration curve used for estimation of NH<sub>3</sub> by NH4<sup>+</sup> ion concentration. The absorbance at 633 nm was measured by UV-Vis spectrophotometer, and the fitting curve shows good linear relation of absorbance with NH<sub>4</sub><sup>+</sup> ion concentration (y = 0.0017x + 0.034, R<sup>2</sup>=0.988) of three times independent calibration curves.



Figure S2. EDX spectrum of Ir NTs.



Figure S3. HRTEM image of single Ir-NT edge (holes in blue dotted circles).



Figure S4. Image of the reaction solution before (A) and after 1h reaction (B).



Figure S5. TEM image of produced Ir aggregates without HEDP.



Figure S6. TEM image of HEDP nanorods.



Figure S7. Image of HEDP nanorods in water (A) and in reaction solution (B) at room temperature.



Figure S8. TEM image of commercial Ir nanocrystals.



Figure S9. CV curves of of Ir NTs and Ir c-NCs in Ar-purged 0.1 M HClO<sub>4</sub>.



Figure S10. OER polarization curves of Ir NTs and homemade Ir nanocrystals in Ar-purged 0.1 M HClO<sub>4</sub> electrolyte.



Figure S11. Tafel plots of the Ir NTs and home-made Ir nanocrystals.



Figure S12. CV curves of of Ir NTs and home-made Ir nanocrystals in Ar-purged 0.1 M HClO<sub>4</sub> electrolyte.



Figure S13. SEM image of Ir NTs after chronopotentiometry test.



Figure S14. NH4<sup>+</sup> yield rate and Faradaic efficiency of Ir c-NCs at different potentials.