**Electronic Supporting Information**

*Of*

**Palladium Nanocubes-Mediated Fenton Catalysis Combined with Chloride Ion-Amplified Electro-Driven Catalysis for Dye Degradation**

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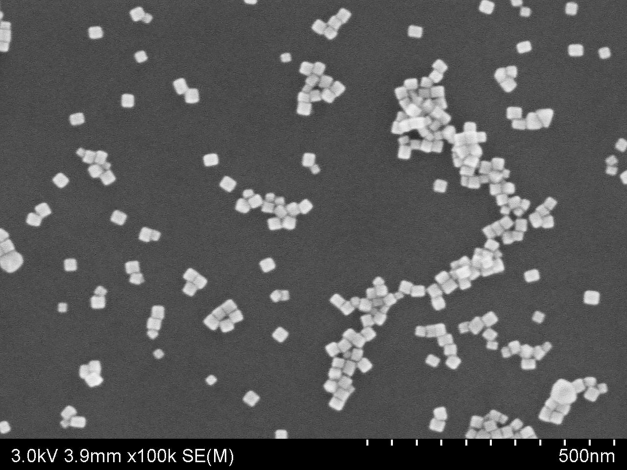
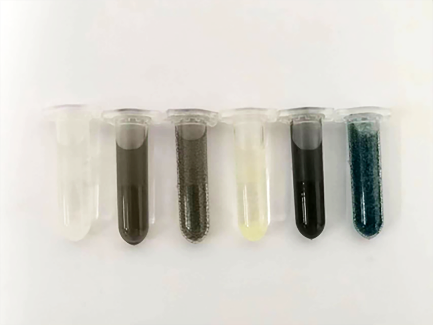
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Figure S1. The SEM image of Pd nanocubes.

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**A**

**B**

**C**

**D**

**E**

**F**

Figure S2. Digital photo of color changes in different groups of solutions (A: TMB, B: Pd cubes, C: Pd cubes + H2O2, D: TMB + H2O2, E: TMB + Pd cubes, F: TMB + Pd cubes + H2O2).

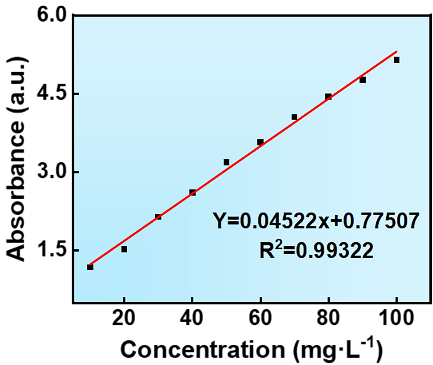
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Figure S3. The standard concentration-absorbance curve of MB.

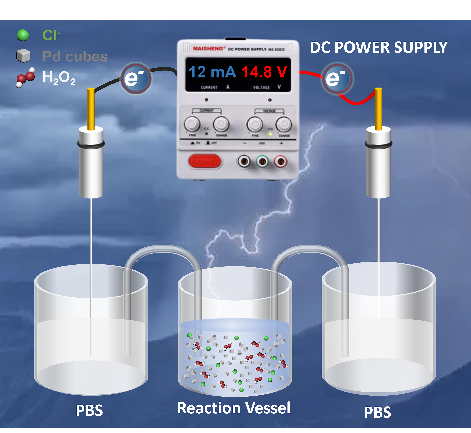
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Figure S4. Double Salt Bridge System.

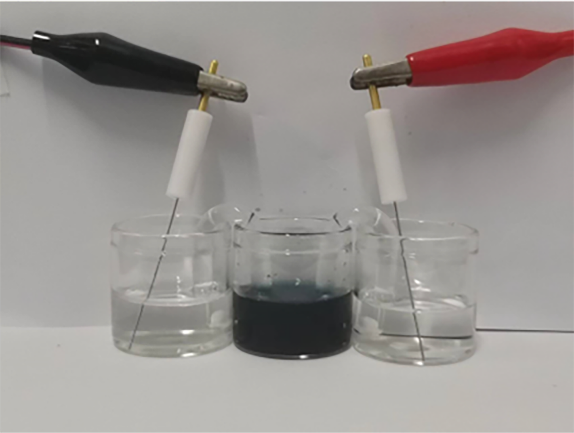
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Figure S5. Digital photo of the double salt bridge system.

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**D**

**B**

**C**

**Before: A**

**D**

**C**

**B**

**After: A**

Figure S6. Photographs before and after electro-driven catalytic degradation of MB at different concentrations of Pd cubes (A: 1000 μg mL-1, B: 500 μg mL-1, C: 250 μg mL-1, D: 125 μg mL-1).

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**Before: A**

**B**

**C**

**D**

**After: A**

**B**

**C**

**D**

Figure S7. Photographs before and after degradation of MB under different catalytic groups (A: Control, B: Pd cubes + E, C: Pd cubes + H2O2, D: Pd cubes + H2O2 + E).

Table S1. Degradation efficiency between different Pd-based synergistic catalytic systems.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Catalyst | MB  (mg L-1) | H2O2  (%) | Catalyst dosage  (g L-1) | Efficiency  (%) | Catalytic systems | Reference |
| Pd cubes | 100 | 2.5 | 1 | ＞99 | electro-driven and Fenton catalysis | This work |
| PdCuAu NAs | 50 | 6 | 2 | 97 | photothermal synergistic Fenton catalysis | [48] |
| PdPtCu NVFs | 50 | 6 | 2 | 99 | photothermal enhanced Fenton catalysis | [49] |
| Pd octahedra | 50 | 3 | 0.125 | 94.8 | photo-Fenton Catalytsis | Later work |