**Additional file**

**Facile aqueous-phase synthesis of Ag-Cu-Pt-Pd quadrometallic nanoparticles**

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**Figure S1**. (a) size distribution of nanoparticles, (b) XRD patterns of synthesized Cu-Ag-Pt-Pd nanoparticles.

Table S1. ICP data of Cu-Ag-Pt-Pd nanoparticle

|  |  |  |  |
| --- | --- | --- | --- |
| Sample | Metal | Mass concentration | percentage |
| Cu-Ag-Pt-Pd | Pd | 1.92 mg/L | 0.68% |
| Pt | 3.55 mg/L | 1.26% |
| Ag | 96.9 mg/L | 34.32% |
| Cu | 180 mg/L | 63.74% |



Figure S2. UV-vis spectrum of prepared Ag-Cu bimetallic nanoparticles.