

Electronic supplementary information (ESI) for Materials Chemistry Frontiers

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Bromine anion mediated epitaxy growth of core-shell Pd@Ag towards efficient electrochemical CO₂ reduction

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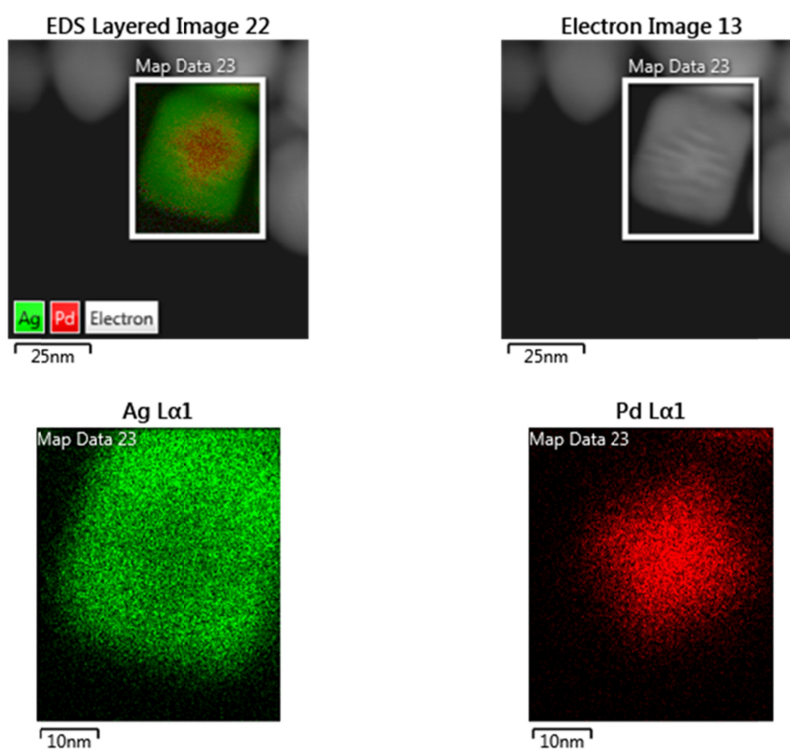


Fig. S1 Raw data of the elemental mapping of Pd@Ag cubes corresponding to Fig. 1e in manuscript.

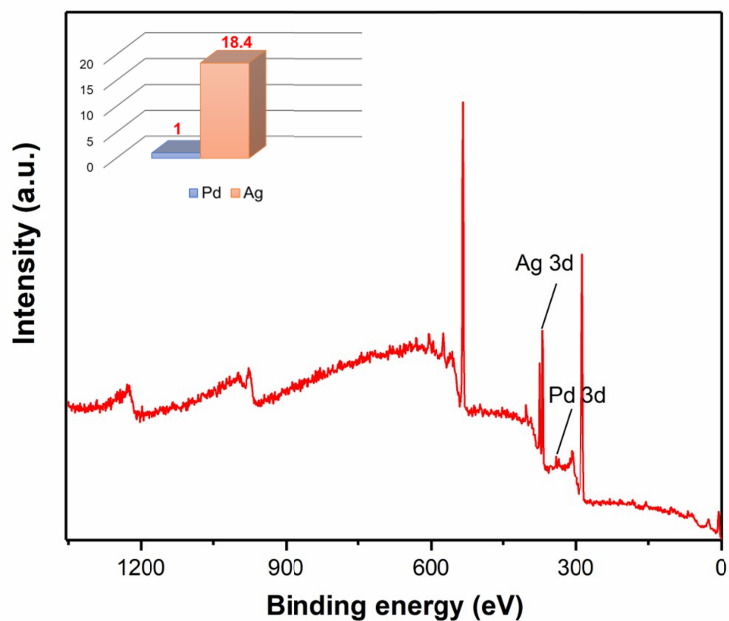


Fig. S2 XPS survey spectra of Pd@Ag that identifies the atomic ratio of Pd to Ag as 1:18.4.

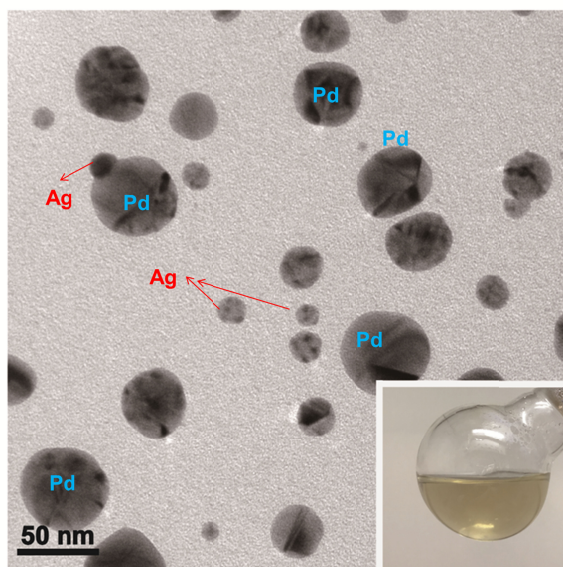


Fig. S3 TEM image of the sample obtained with excessive CTAB (1.0 mmol L⁻¹). Inset panel is the picture of the solution after reaction, and the yellow-brown colour indicates the formation of nanosized Ag that corresponds to the small particles observed in TEM. Although some particles are observed on Pd Octs, the undefined growth cannot result in a uniform shell on a Pd core.

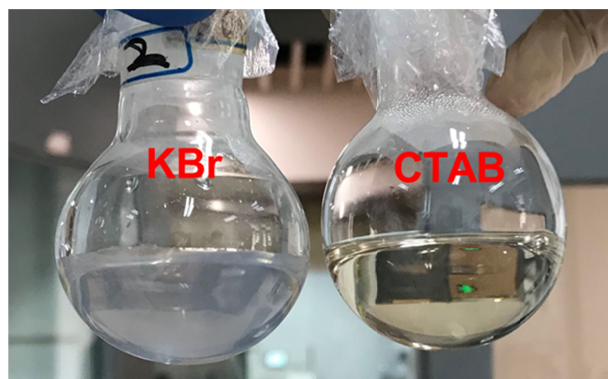


Fig. S4 Digital photos of the initial solutions in control experiments that use KBr and CTAB to fabricate Pd@Ag, respectively. Obviously, without the protection by CTA⁺ chains, the free Br⁻ in solution easily reacts with Ag⁺ quickly, generating white colloid precipitates that prohibit the further reactions towards well-defined Pd@Ag.

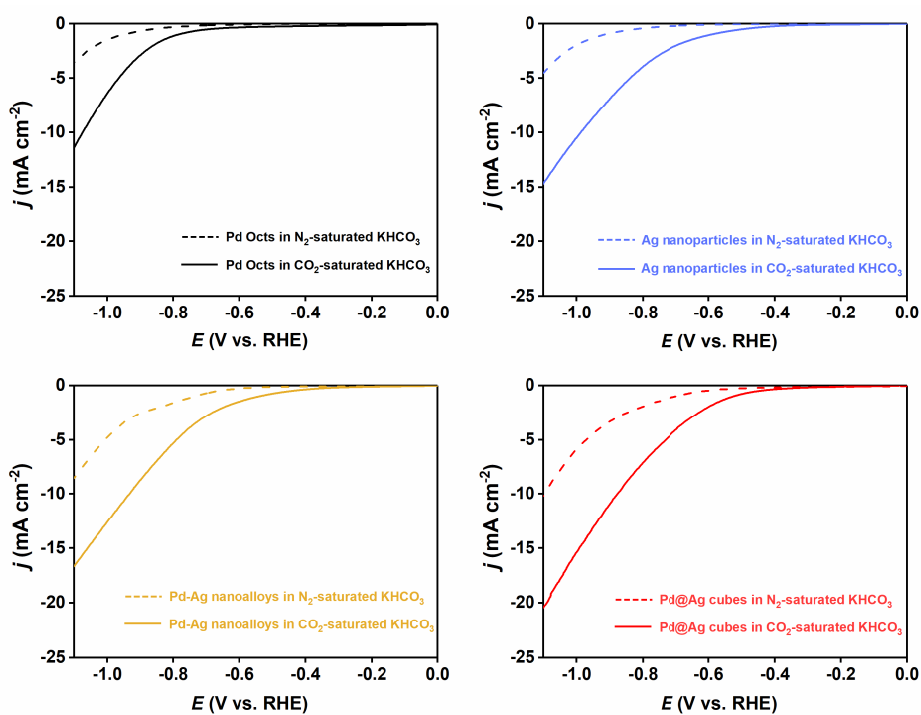


Fig. S5 Polarization curves of carbon supported Pd Octs, Ag nanoparticles, Pd-Ag nanoalloys and Pd@Ag in CO₂-saturated and N₂-saturated 0.5 M KHCO₃ electrolytes.