

Fig.S1 (a) SEM images together with (b) Au element distribution, (c) Cu element distribution and (d) EDS analysis for Au₂Cu sample. (e) SEM images together with (f) Au element distribution, (g) Cu element distribution and (h) EDS analysis for AuCu sample

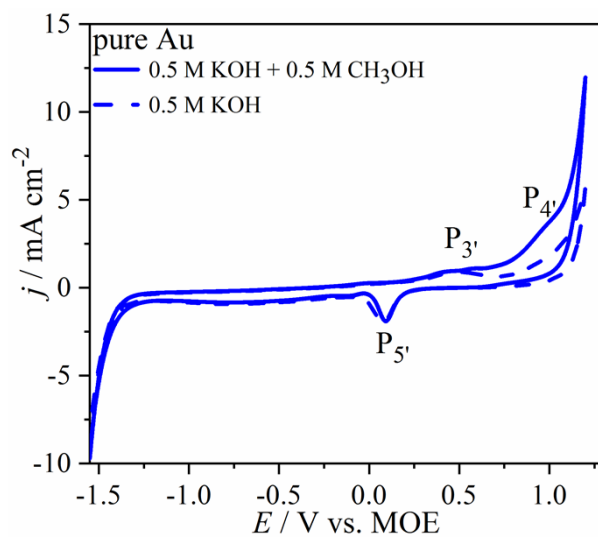


Fig.S2 Cyclic voltammogram (CV) of pure Au in 0.5 M KOH + 0.5 M CH₃OH solution. The dash line is the CV curve in 0.5 M KOH solution. Scan rate ν : 50 mV/s



Fig.S3 SEM image of pure Au after CV test in 0.5 M KOH + 0.5 M CH₃OH solution

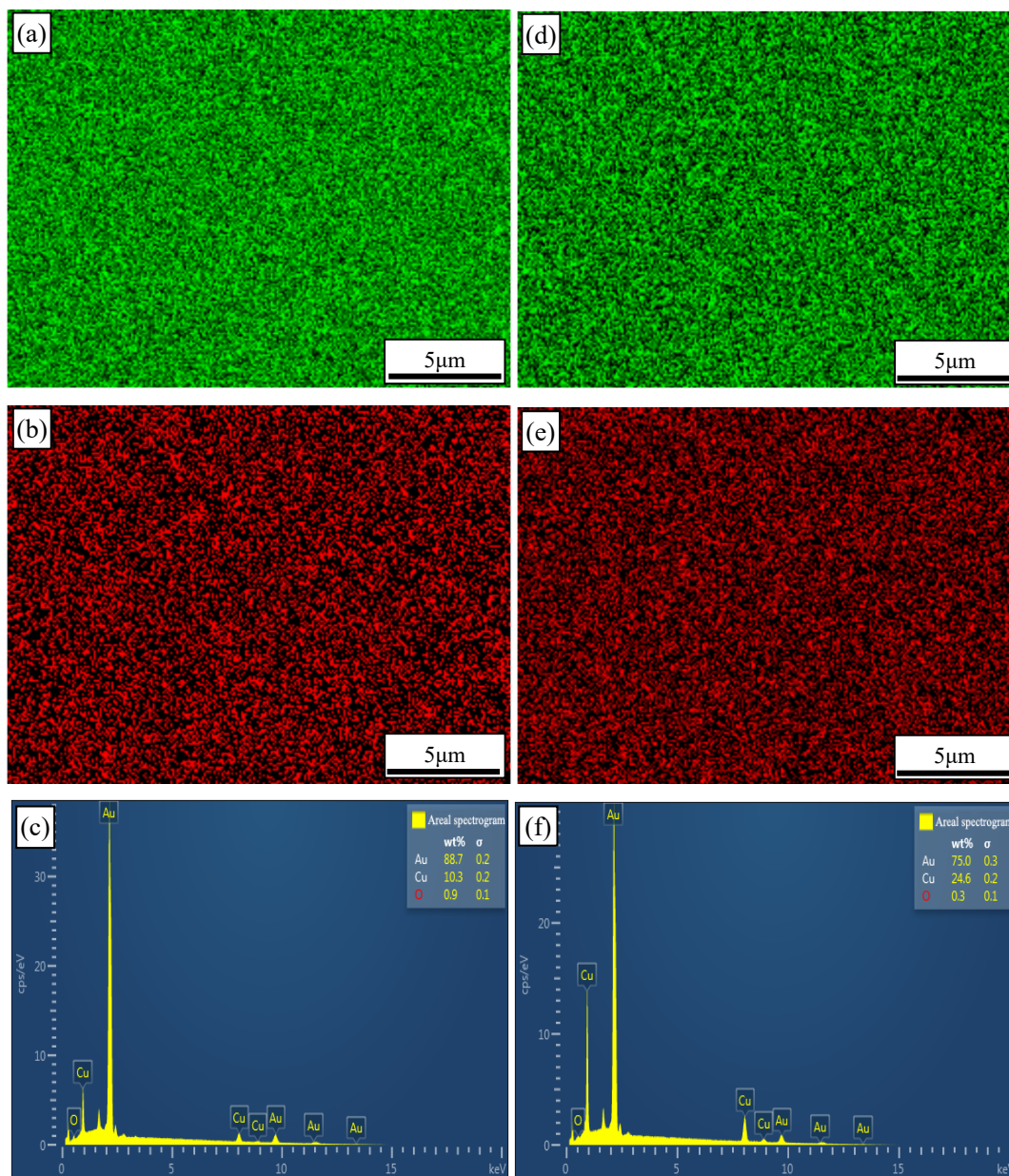


Fig.S4 (a) Au element distribution, (b) Cu element distribution and (c) EDS analysis for Au₂Cu sample surface after CV test in 0.5 M KOH + 0.5 M CH₃OH solution. (d) Au element distribution, (e) Cu element distribution and (f) EDS analysis for AuCu sample surface after CV test in 0.5 M KOH + 0.5 M CH₃OH solution

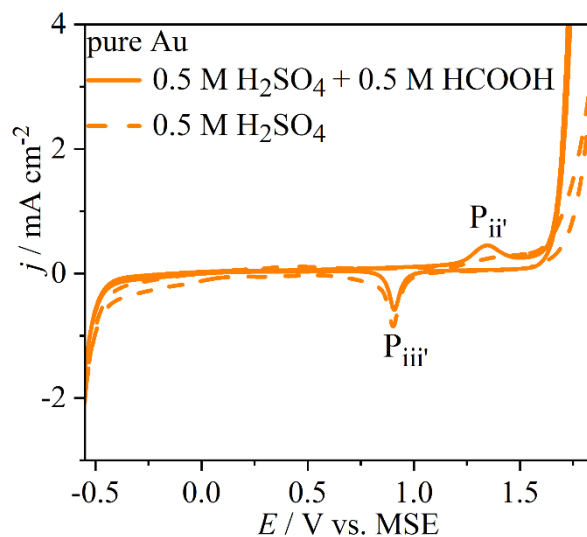


Fig.S5 Cyclic voltammogram (CV) of pure Au in 0.5 M H₂SO₄ + 0.5 M HCOOH solution. The dash line is the CV curve in 0.5 M H₂SO₄ solution. Scan rate v : 50 mV/s



Fig.S6 SEM image of pure Au after CV test in 0.5 M H₂SO₄ + 0.5 M HCOOH solution

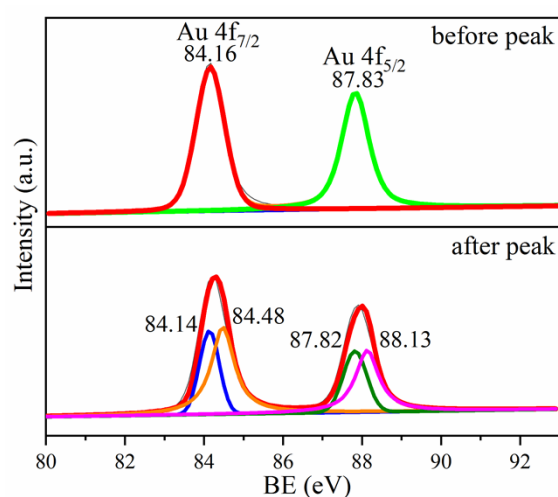


Fig.S7 XPS spectra of sample surfaces with pure Au before and after the anodic peak P₃ of CV curves tested in 0.5 M KOH + 0.5 M CH₃OH solution