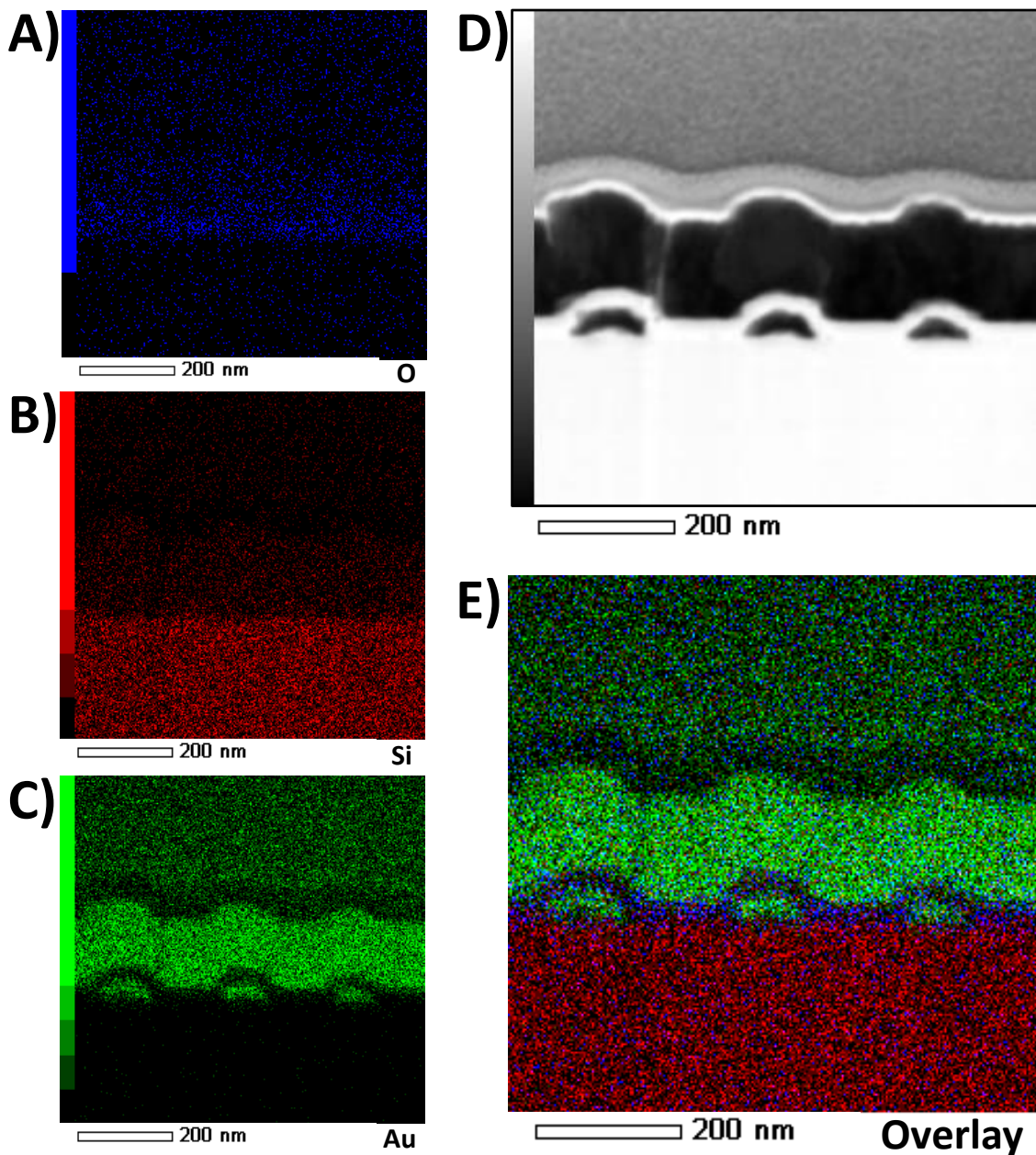
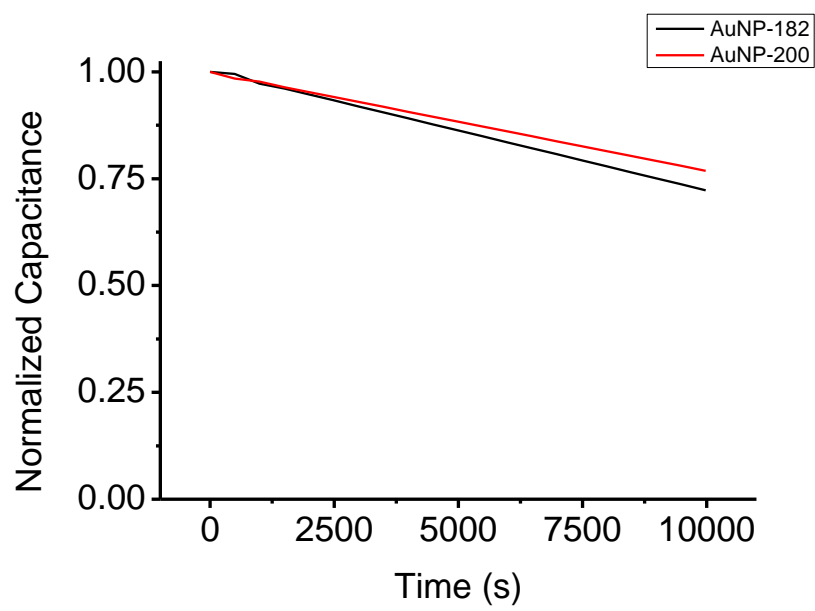


### Supporting Information



**Figure S1.** STEM images that map different layers of the gold nanoparticle cluster capacitive device stack with A) oxygen from the tunnel  $\text{SiO}_2$ , B) silicon substrate and C) gold from charge storage centers and top electrode. D) Cross section TEM image of the device with its composition identified and overlaid in E).



**Figure S2.** The retention characteristics of the gold nanocluster arrays (AuNP-182 and AuNP-200) show that close to 75% of the charge is retained after discharging the device for 10,000s.