

Figure S1. (a)(b) The representative morphology of AgBr nanoparticles with radical and gradient distribution circling the mediated material titanate nanotubes (HTNTs). (c) The synthetic strategy for fabricating gradient AgBr nanoparticles with assistance of the surface of HTNTs  
 120x120mm (600 x 600 DPI)

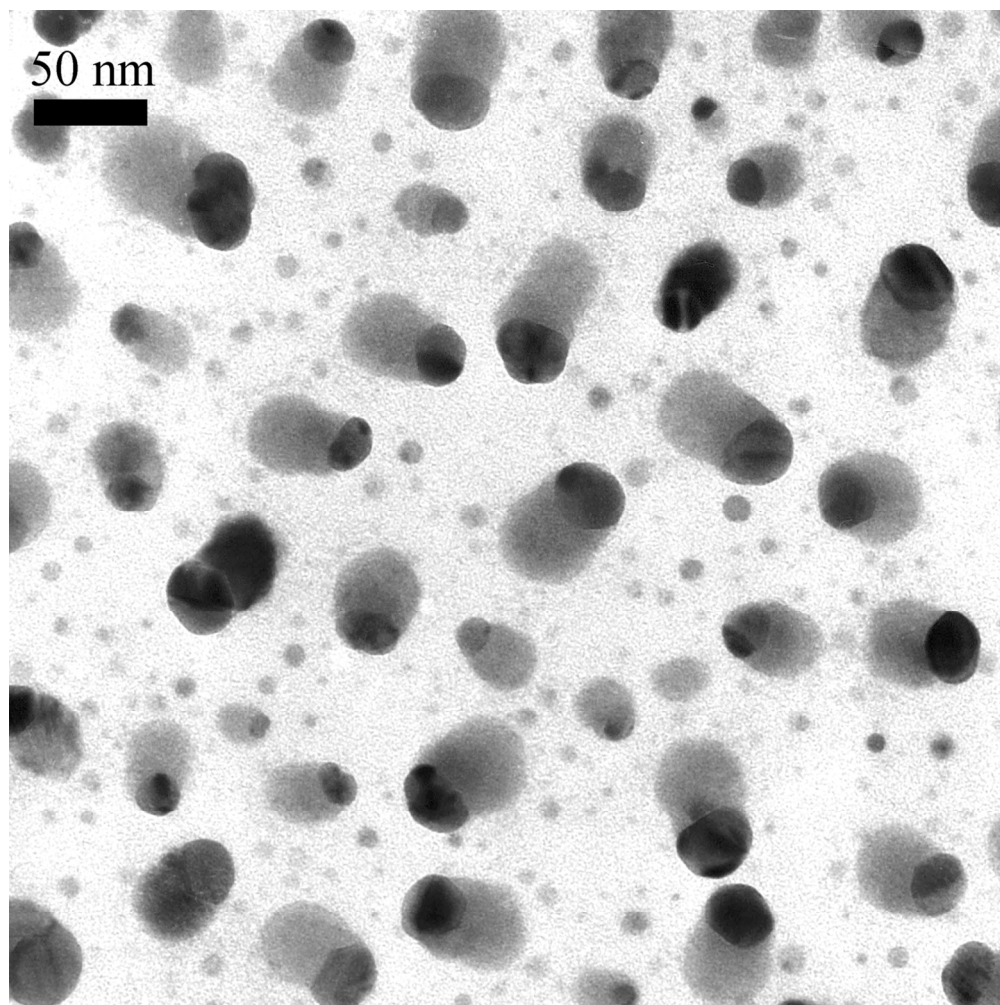


Figure S2. Representative one-sided silver growth on uniform seeds with size  $\sim 20$  nm to fabricate uniform nanodumbbells in high yield.  
119x119mm (300 x 300 DPI)

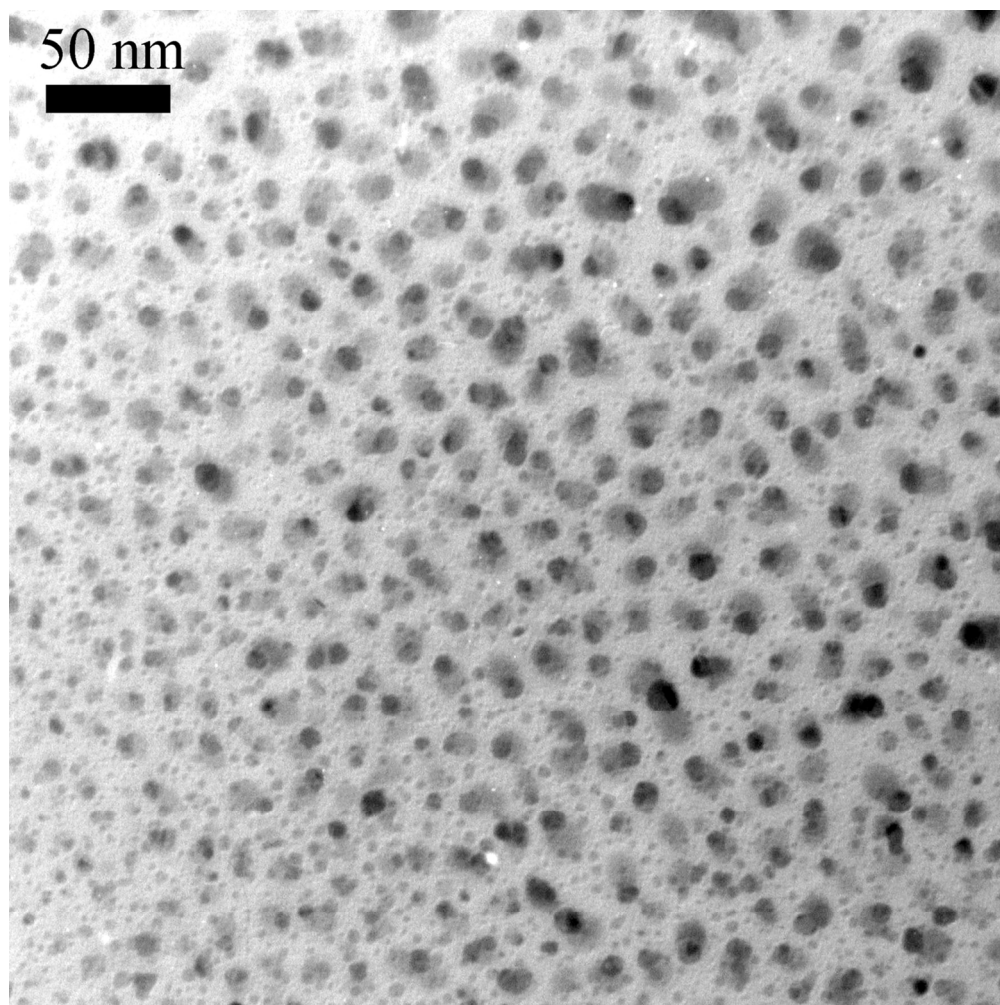


Figure S3. Representative one-sided silver growth on uniform seeds with size  $\sim 10$  nm to fabricate uniform nanodumbbells in high yield.  
119x119mm (300 x 300 DPI)



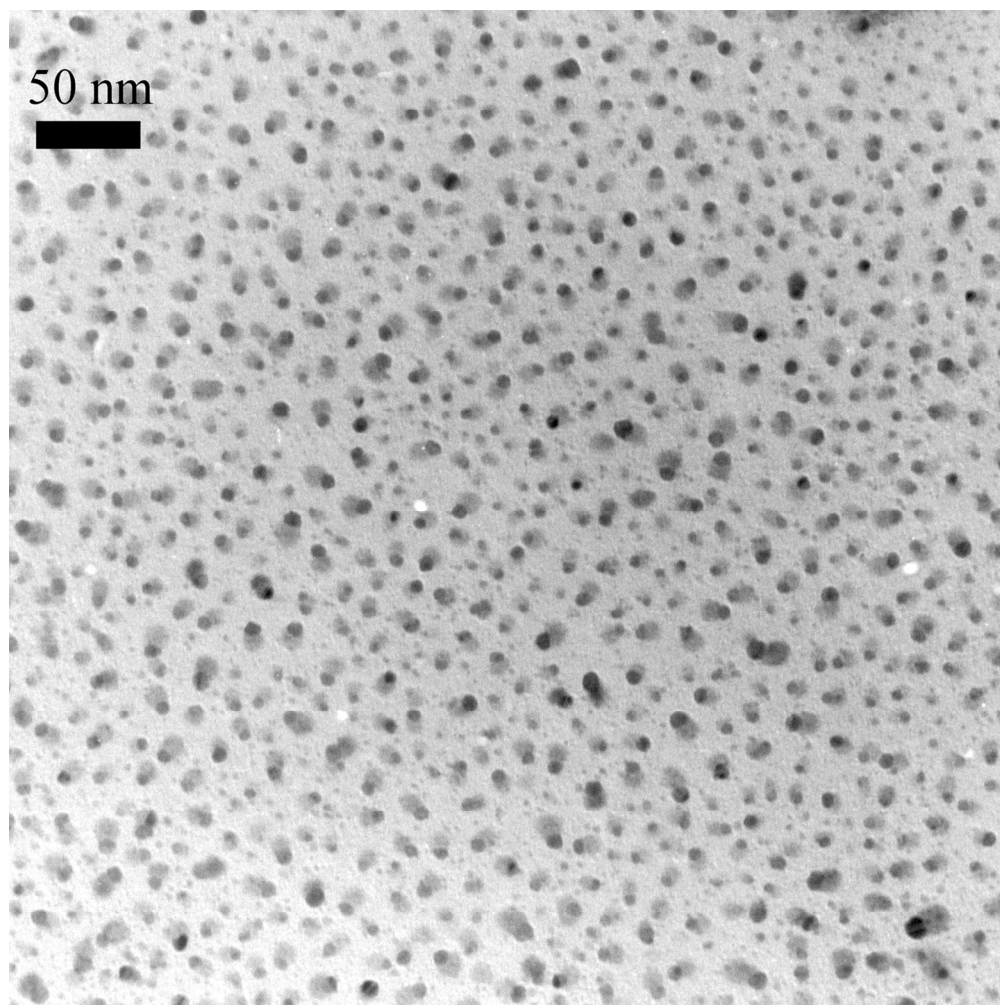


Figure S4. Figure S2. Representative one-sided silver growth on uniform seeds with size  $\sim 5$  nm to fabricate uniform nanodumbbells in high yield.  
119x119mm (300 x 300 DPI)

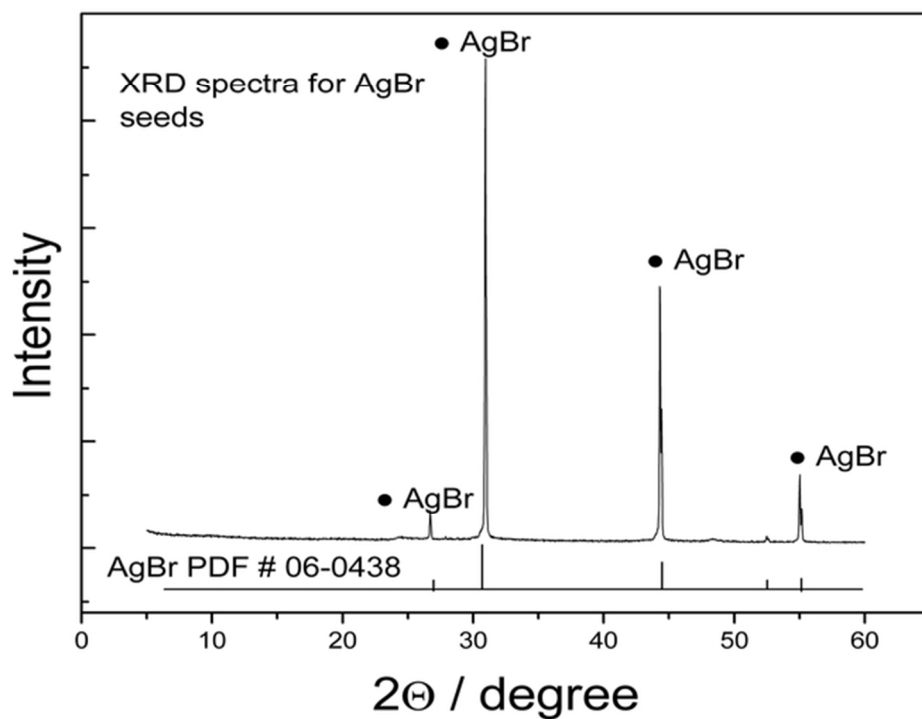


Figure 5. Powder X-ray diffraction for AgBr nanoparticle seeds before seeded silver growth  
59x44mm (300 x 300 DPI)

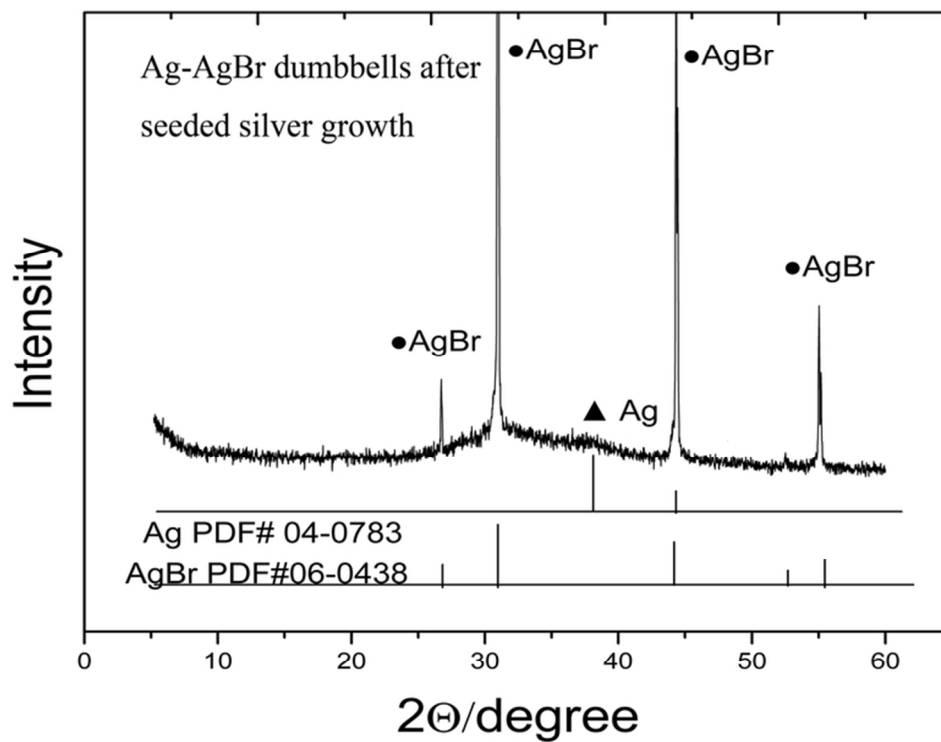


Figure S6. Powder X-ray diffraction for Ag-AgBr nanodumbbells  
69x56mm (300 x 300 DPI)