

Electronic Supplementary Material

Design and fabrication of bimetallic plasmonic colloids through cold nanowelding

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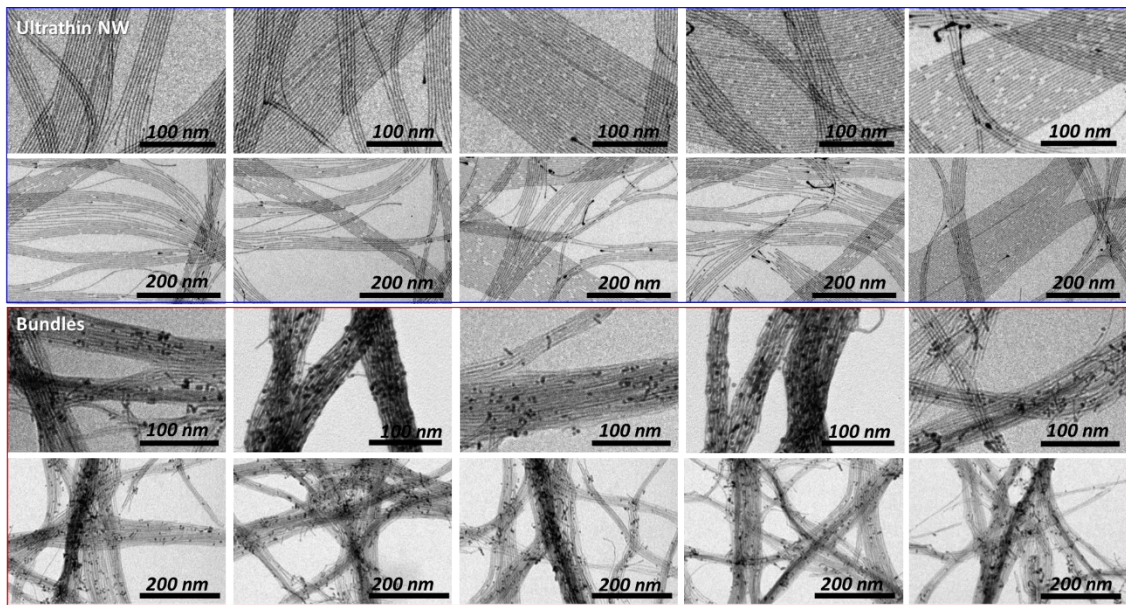


Figure S1. TEM images of the as-synthesized ultrathin Au nanowires (top). TEM images of the Au bundles formed after PEI coating (bottom).

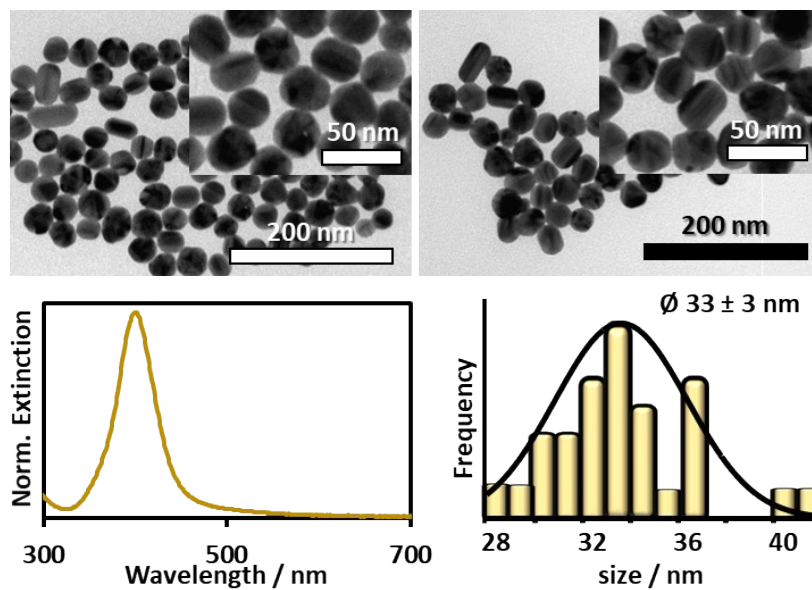


Figure S2. TEM images, extinction spectrum, and size histogram distribution of the negatively charged citrate-capped silver nanoparticles of 33 ± 3 nm (AgNP₃₃).

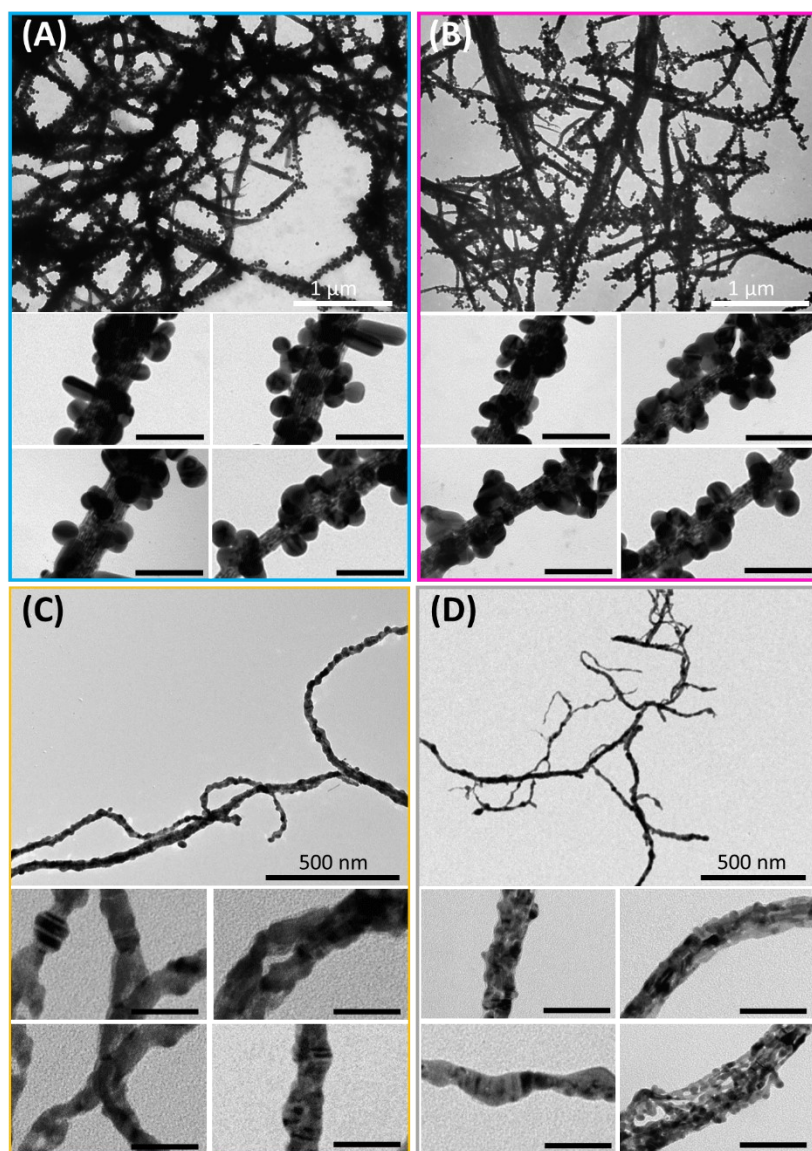


Figure S3. Additional TEM images of bundle@AgNP₃₃ at different stages of the welding process: (A) 1 day, (B) 4 days, (C) 14 days and (D) 30 days. When otherwise indicated, scale bar = 100 nm.

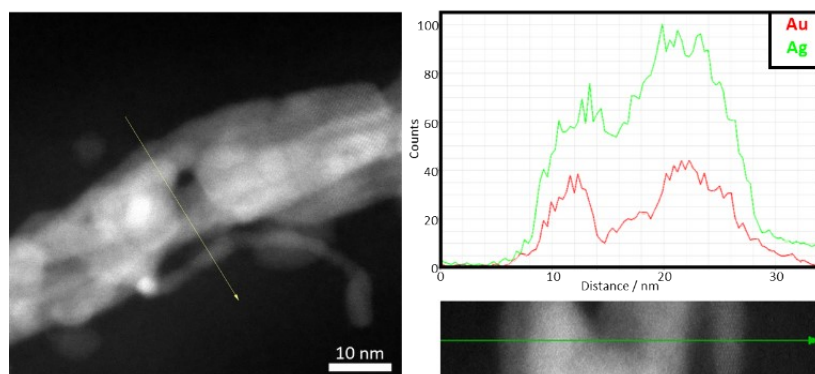


Figure S4. STEM image and EDX line scan analysis bundle@AgNP₃₃ after 14 days of welding showing how Ag and Au are homogeneously along the bundles in a core-shell configuration.

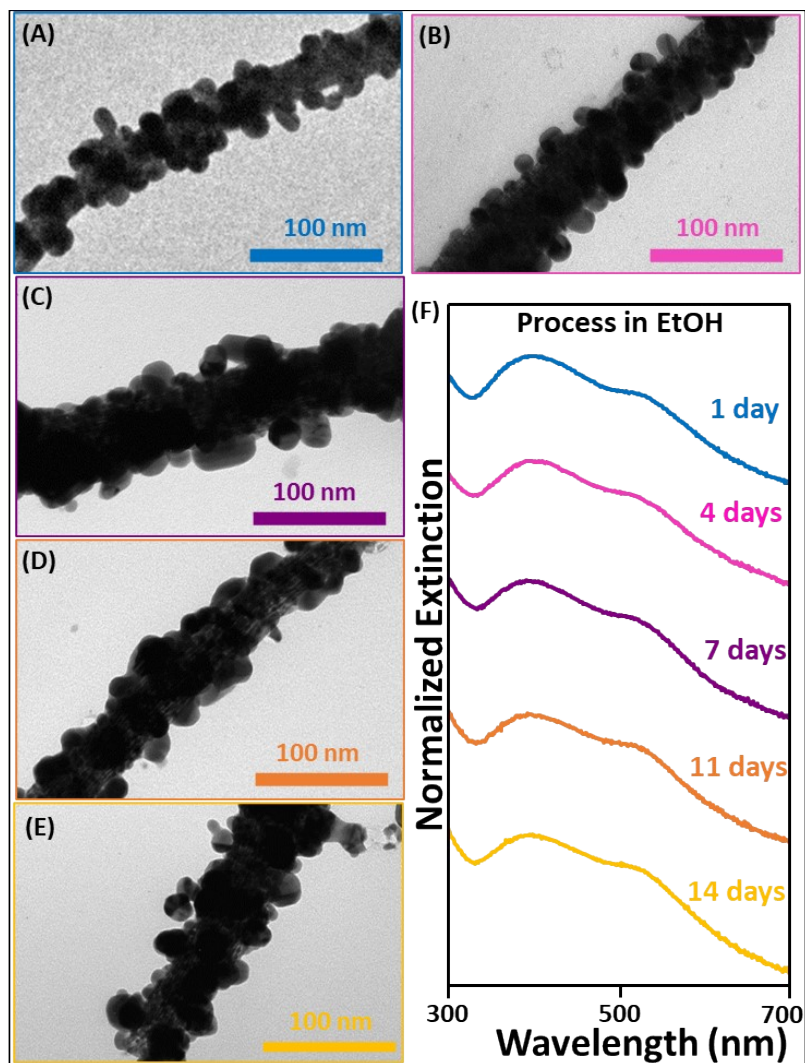


Figure S5. (A-E) Representative TEM images of the bundle@AgNP₃₃ assemblies at different stages of the welding process in ethanol (1, 4, 7, 11 and 14 days, from A to E, respectively). (F) Extinction spectra of the bundle@AgNP₃₃ assemblies over time. The intensity of the stacked extinction spectra was adjusted for better visualization.

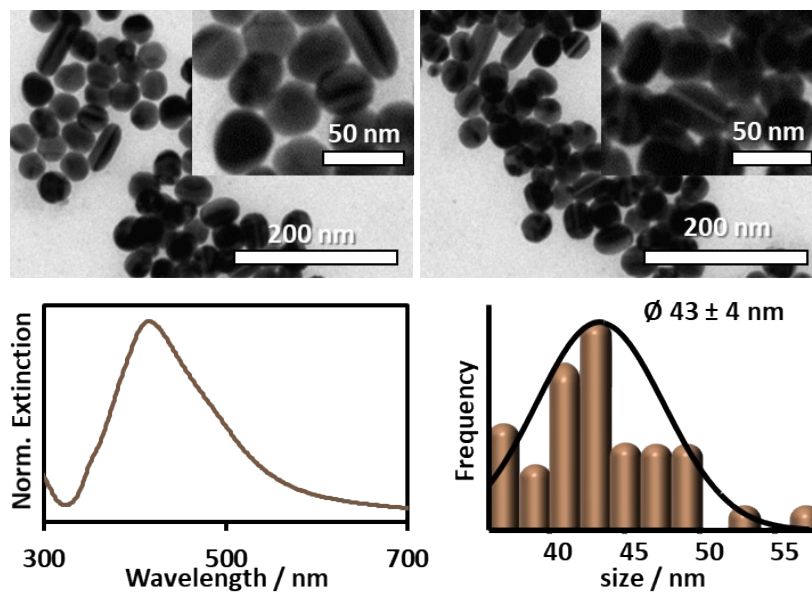


Figure S6. TEM images, extinction spectrum, and size histogram distribution of the negatively charged citrate-capped silver nanoparticles of $43 \pm 4 \text{ nm}$ (AgNP_{43}).

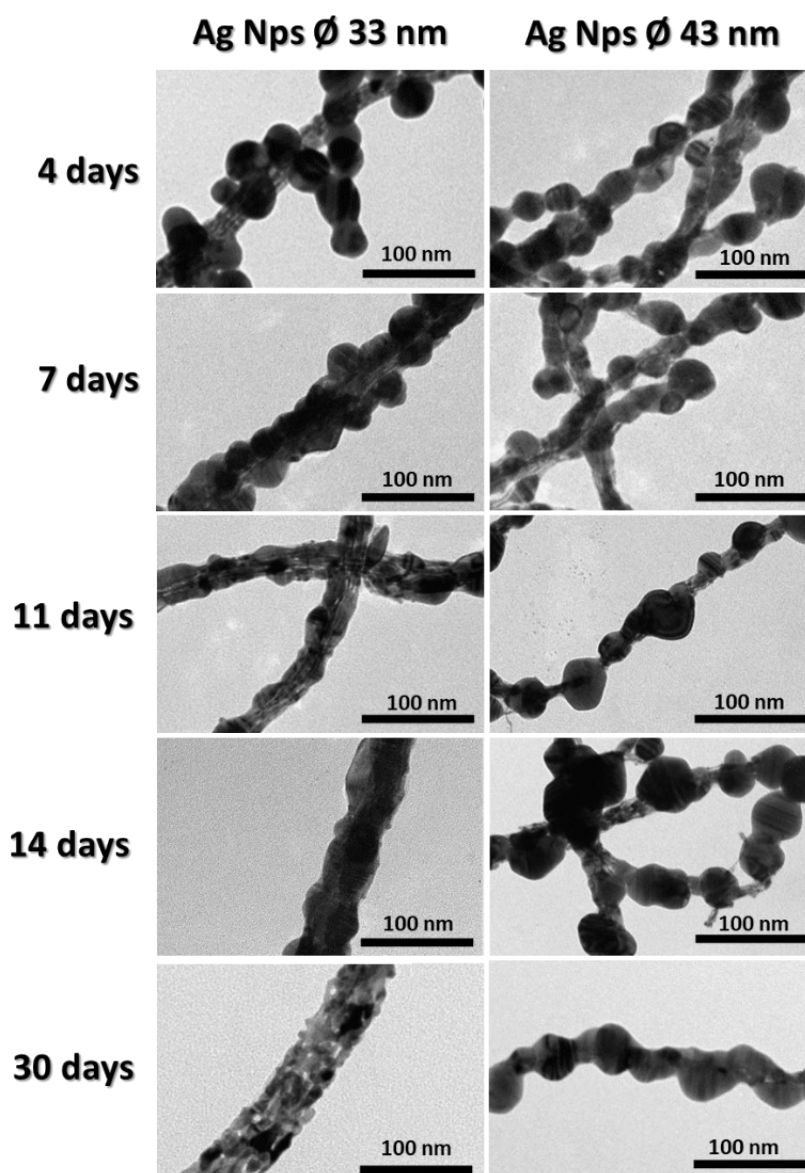


Figure S7. TEM images showing the comparison over time (4, 7, 11, 14 and 30 days) of bundle@AgNP assemblies using two different sizes (33 and 43 nm, left and right respectively) of AgNPs.

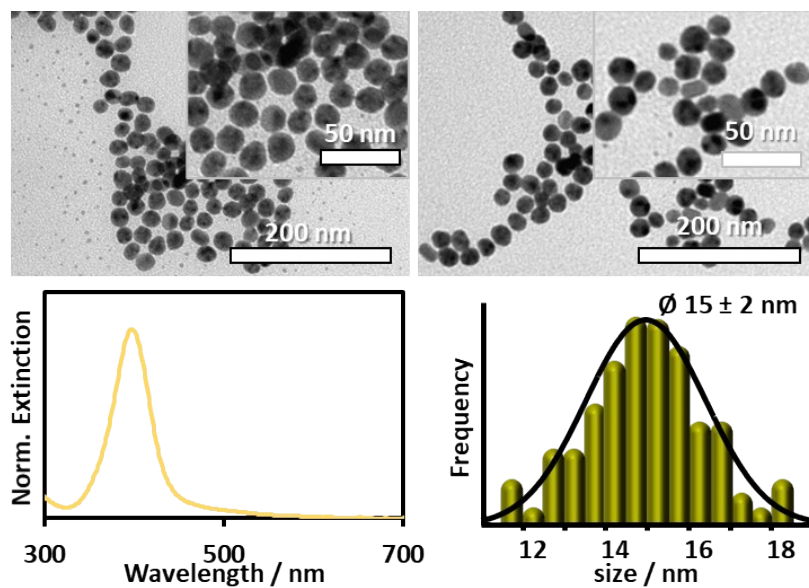


Figure S8. TEM images, extinction spectrum, and size histogram distribution of the negatively charged citrate-capped silver nanoparticles of 15 ± 2 nm (AgNP_{15}).

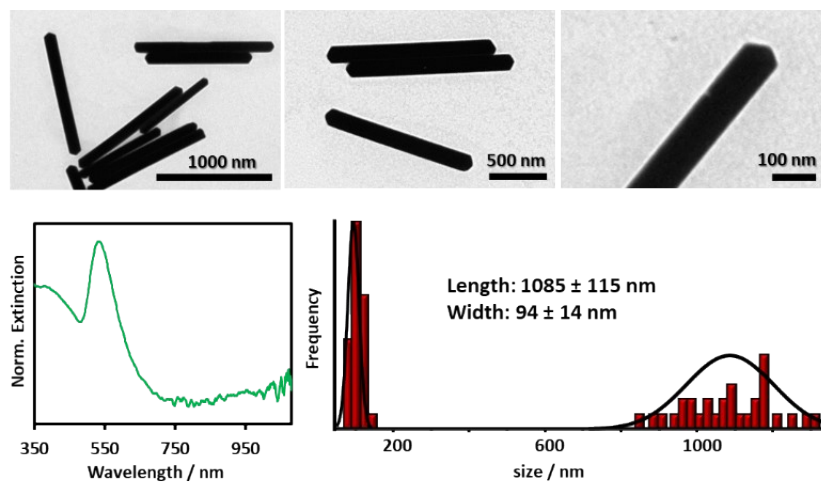


Figure S9. TEM images, extinction spectrum, and size histogram distribution of the as-synthesized AuNRs of 1085 ± 115 nm long and 94 ± 14 nm thick (AuNRs).

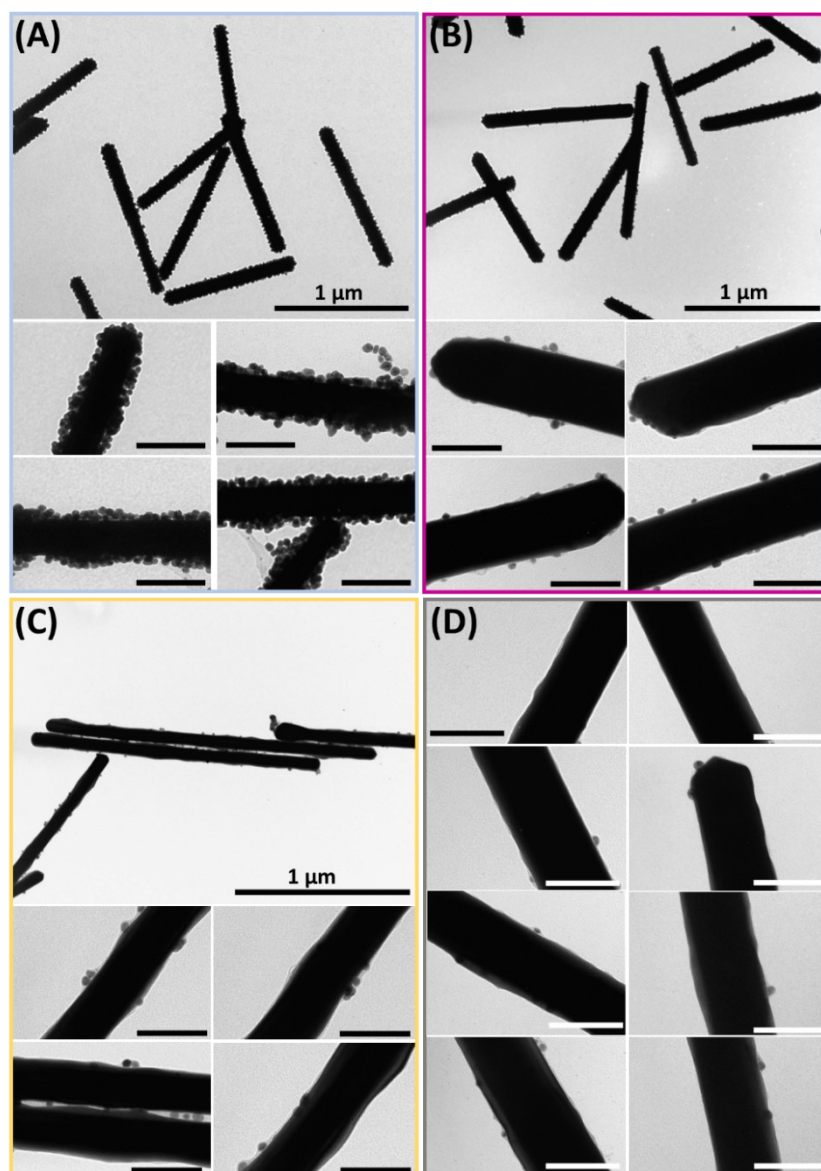


Figure S10. Additional TEM images of NR@AgNP₁₅ assemblies at different stages of the welding process: (A) 30 min, (B) 6 h, (C) 2 days, and (D) 4 days. When otherwise indicated, scale bar = 100 nm.

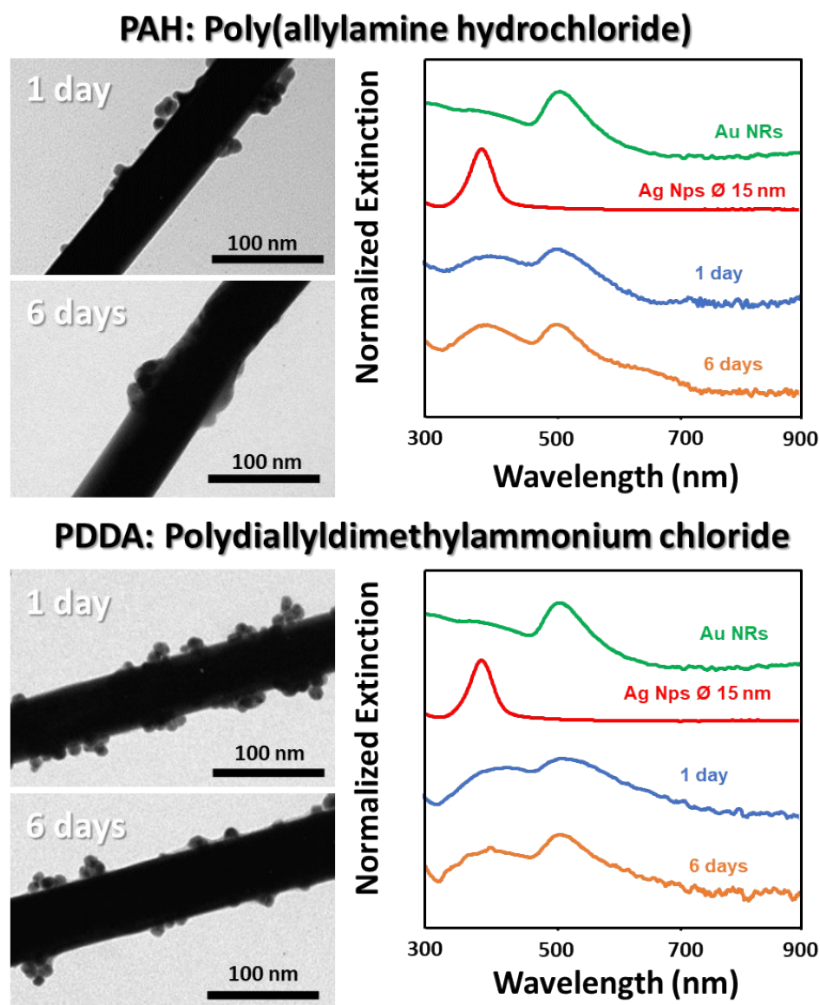


Figure S11. TEM images and extinction spectra of NR@AgNP₁₅ assemblies produced with two different polyelectrolytes (PAH (top) and PDDA (bottom)) at two different stages of the welding process (1 and 6 days). The extinction spectra of the individual NPs components are also included for comparison.

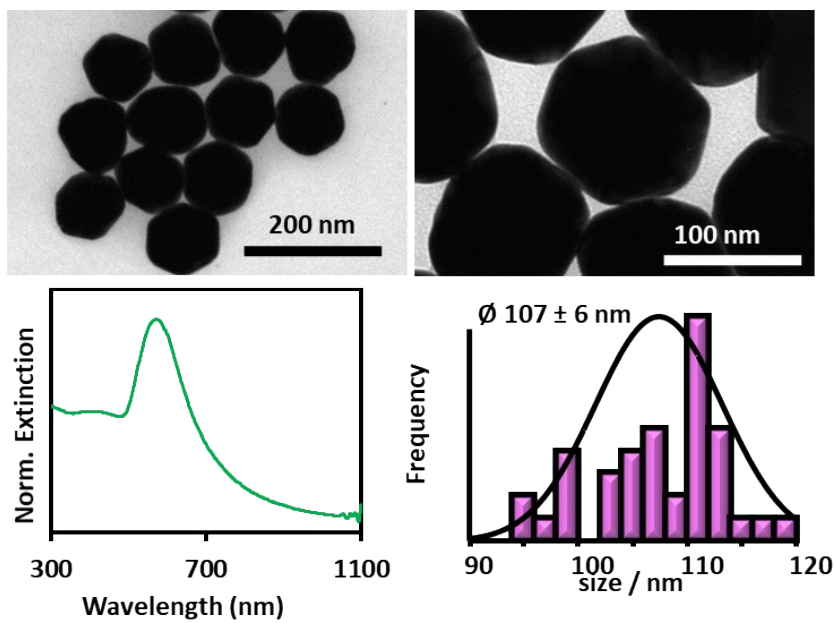


Figure S12. TEM images, extinction spectrum, and size histogram distribution of 107 ± 6 nm Au nanoparticles (AuNP₁₀₇).

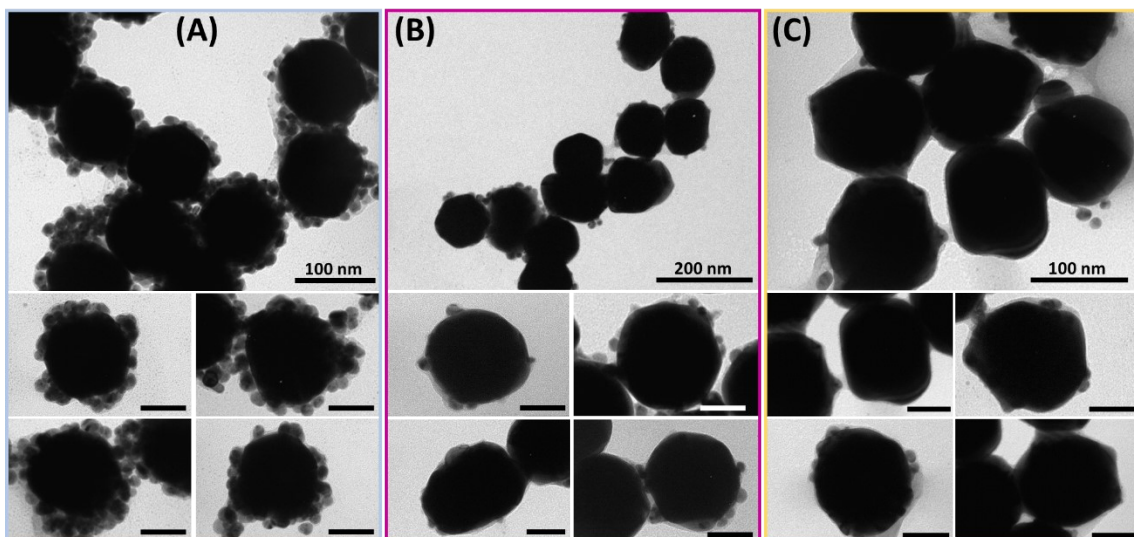


Figure S13. Additional TEM images of AuNP₁₀₇@AgNP₁₅ at different stages of the welding process: (A) 1 day, (B) 8 days, and (C) 20 days. When otherwise indicated, scale bar = 50 nm.

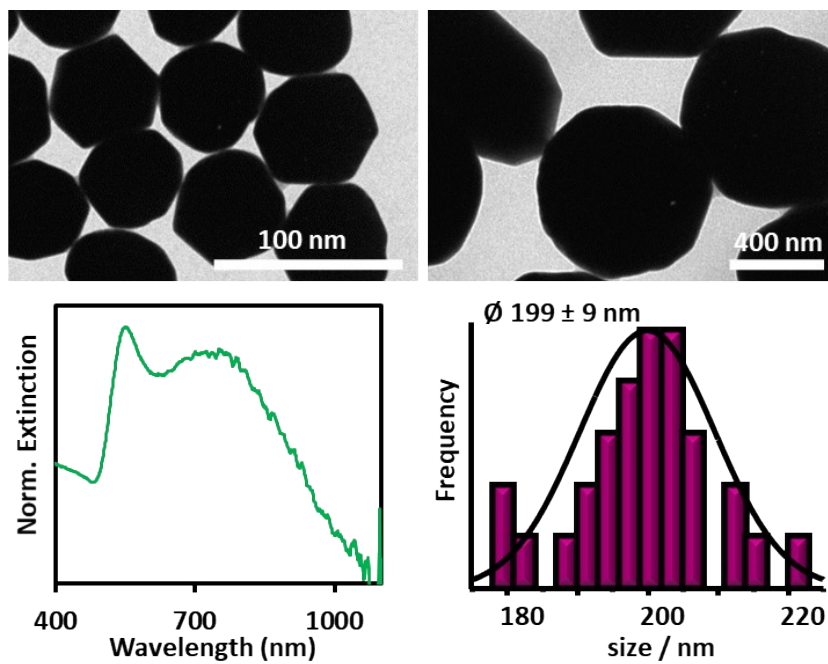


Figure S14. TEM images, extinction spectrum, and size histogram distribution of $199 \pm 9 \text{ nm}$ Au nanoparticles (AuNP₁₉₉).

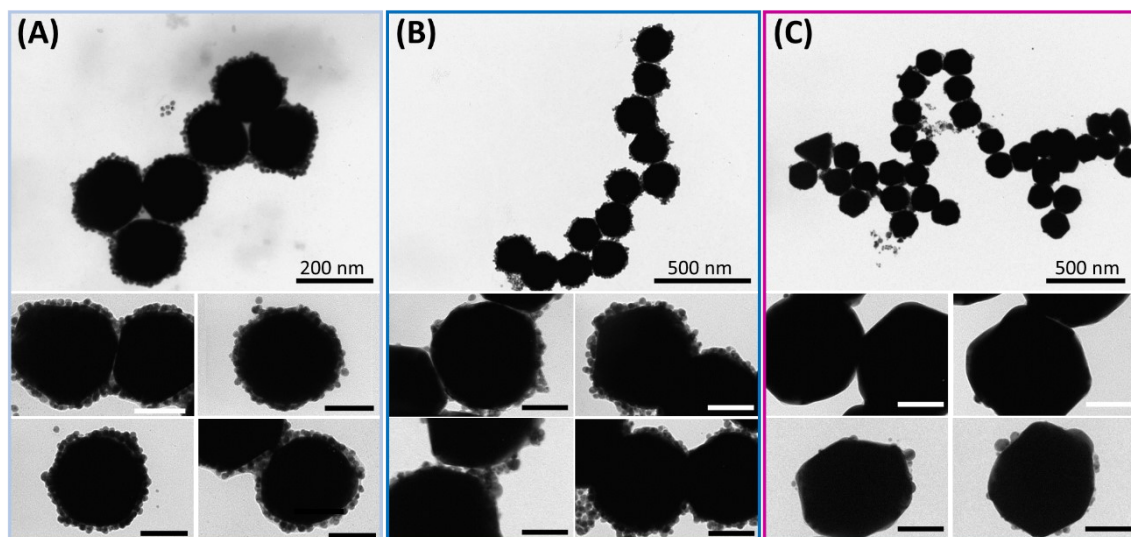


Figure S15. Additional TEM images of AuNP₁₉₉@AgNP₁₅ at different stages of the welding process: (A) 1 day, (B) 3 days, and (C) 6 days. When otherwise indicated, scale bar = 100 nm.