Supplementary Material (ESI) for CrystEngComm

Supplementary Information

Shape changes in Au–Ag bimetallic systems involving polygonal Au nanocrystals to spherical Au/Ag alloy and excentered Au core Ag/Au alloy shell particles under oil-bath heating

Md. Jahangir Alam,[a] Masaharu Tsuji,*[a,b] Mika Matsunaga[b] and Daiki Yamaguchi[a]

[a] *Department of Applied Science for Electronics and Materials, Graduate School of Engineering Sciences, Kyushu University, Kasuga 816-8580, Japan*

[b] *Institute for Materials Chemistry and Engineering, Kyushu University, Kasuga 816-8580, Japan*

**To whom correspondence should be addressed: E-mail: tsuji@cm.kyushu-u.ac.jp*

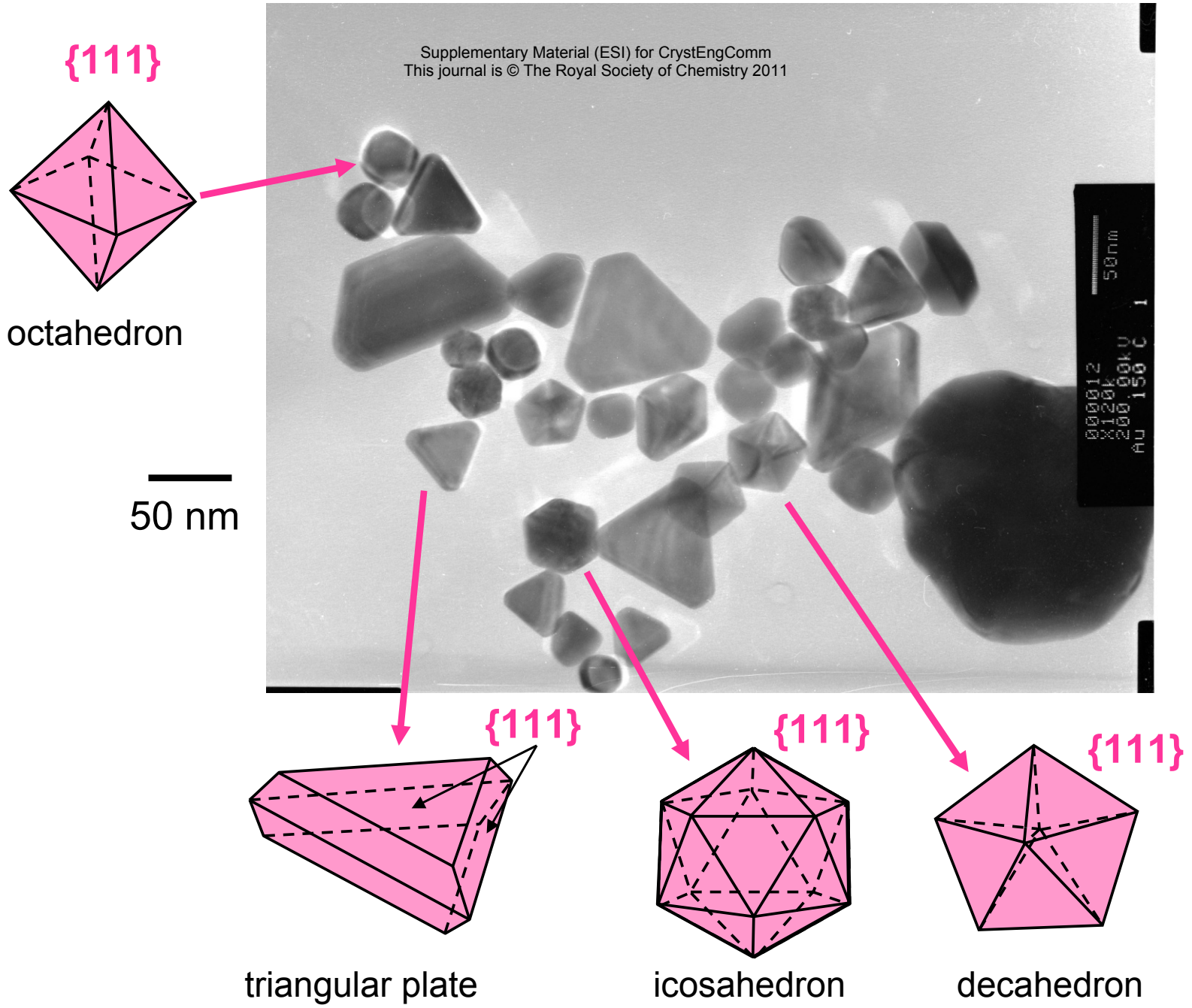


Fig. S1. TEM image of typical polygonal Au seeds and their crystal structures.

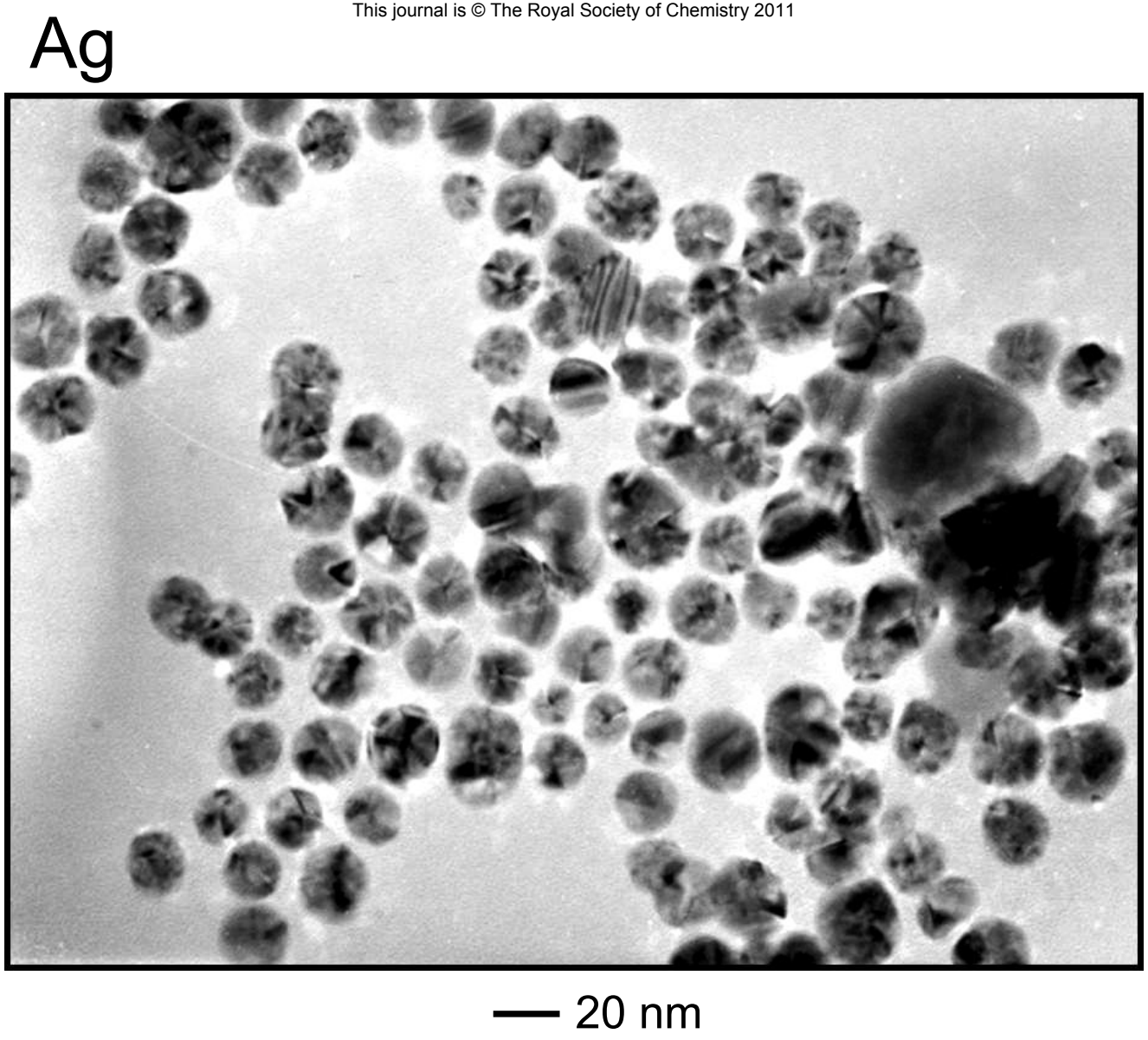


Fig. S2. Expanded Fig. 1(b) where five-twin lines are observed in many particles.

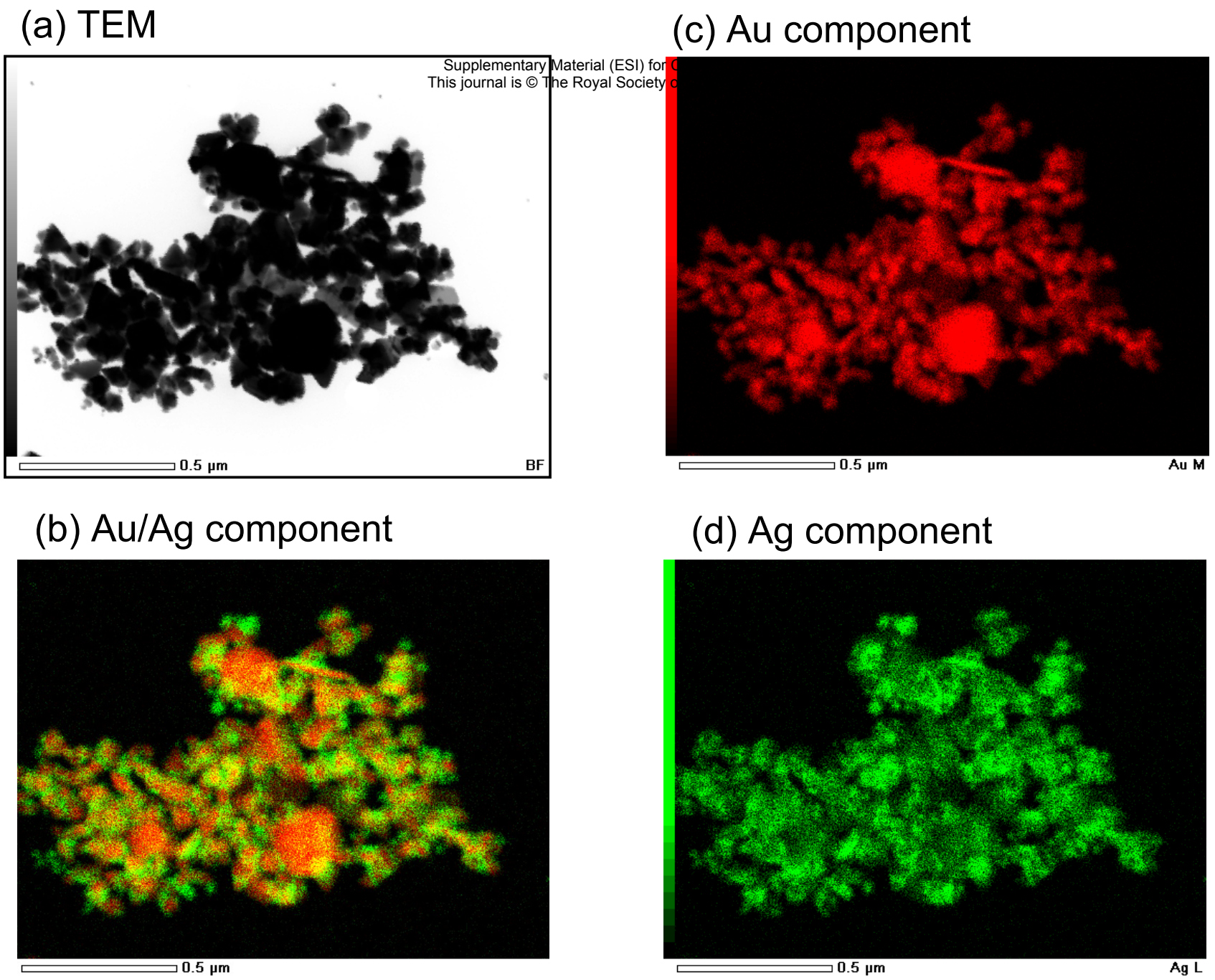
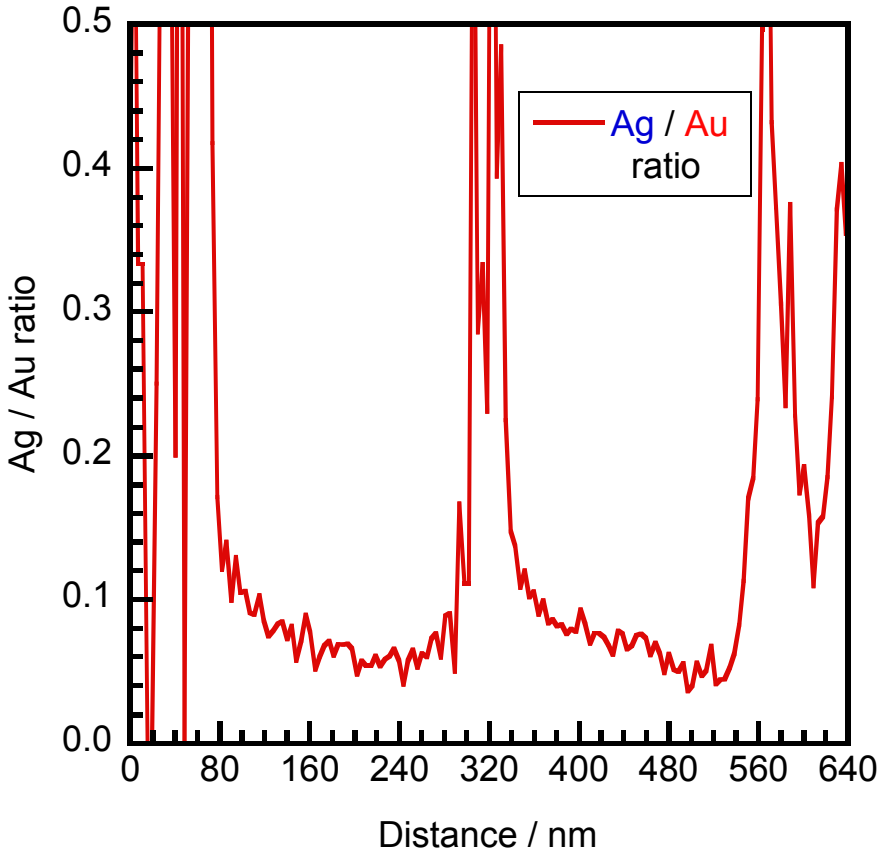


Fig. S3. TEM and TEM-EDS data of string type of Au/Ag nanostructures prepared under oil-bath heating of Au/Ag seeds for 30 min.



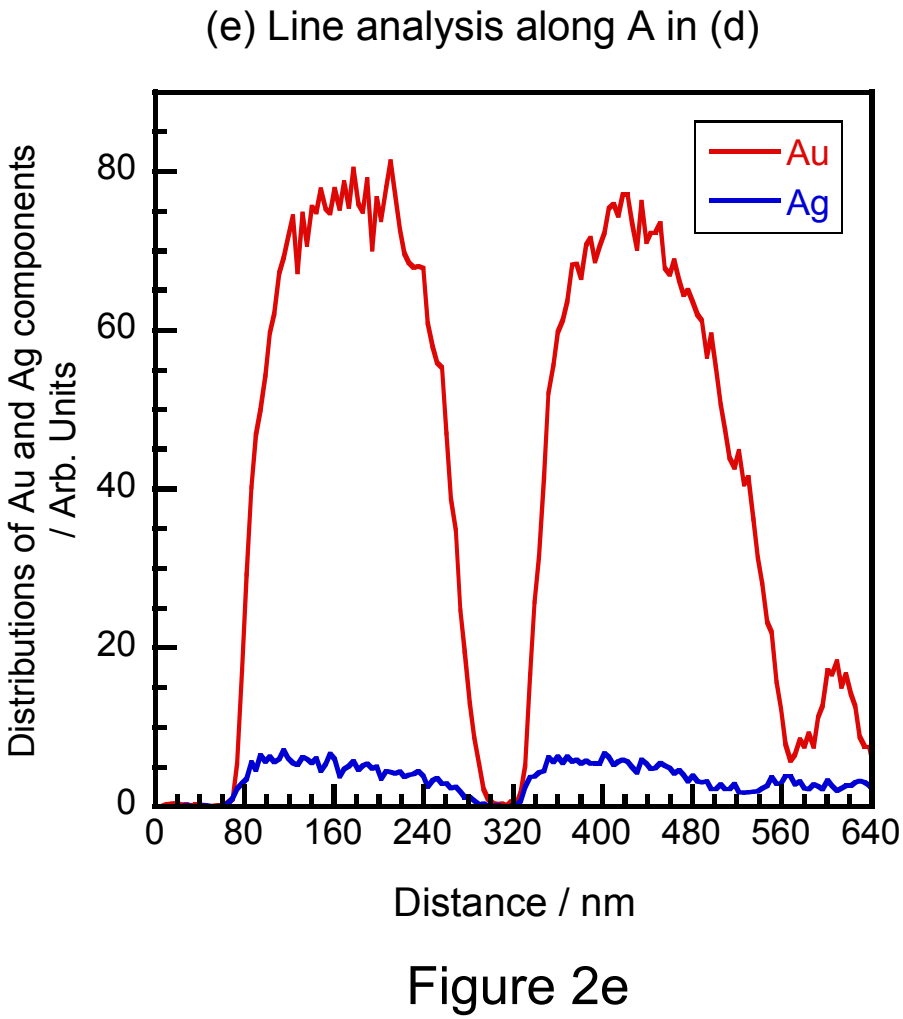


Figure 2e

Fig. S4. Ag/Au ratio in Fig. 2e. For comparison line analysis data of Fig. 2e are shown in right side.

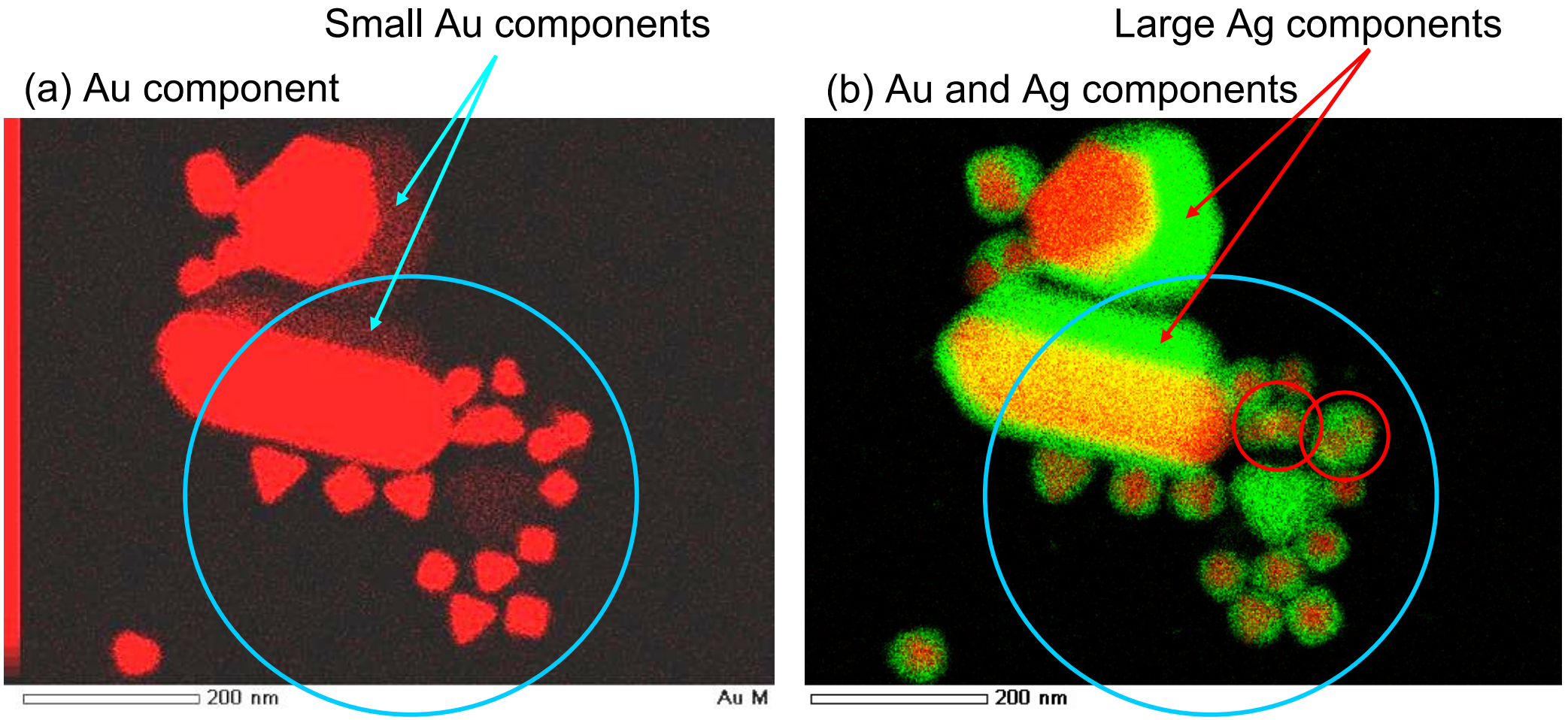


Fig. S5. Expanded Fig. 5b1 and 5d1.

In blue circles, many Au@Ag nanocrystals are observed.

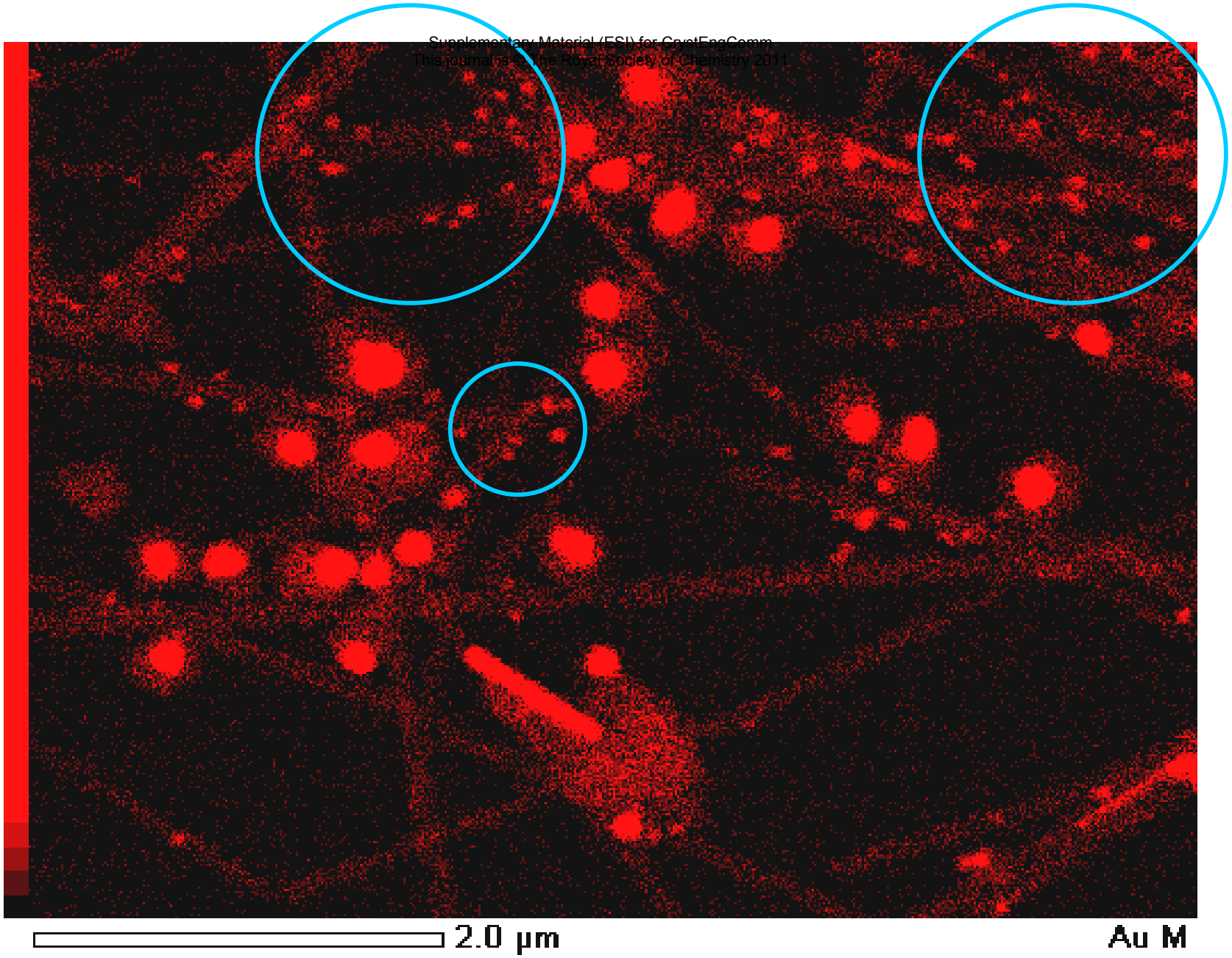


Fig. S6. Expanded Fig. 5b2.

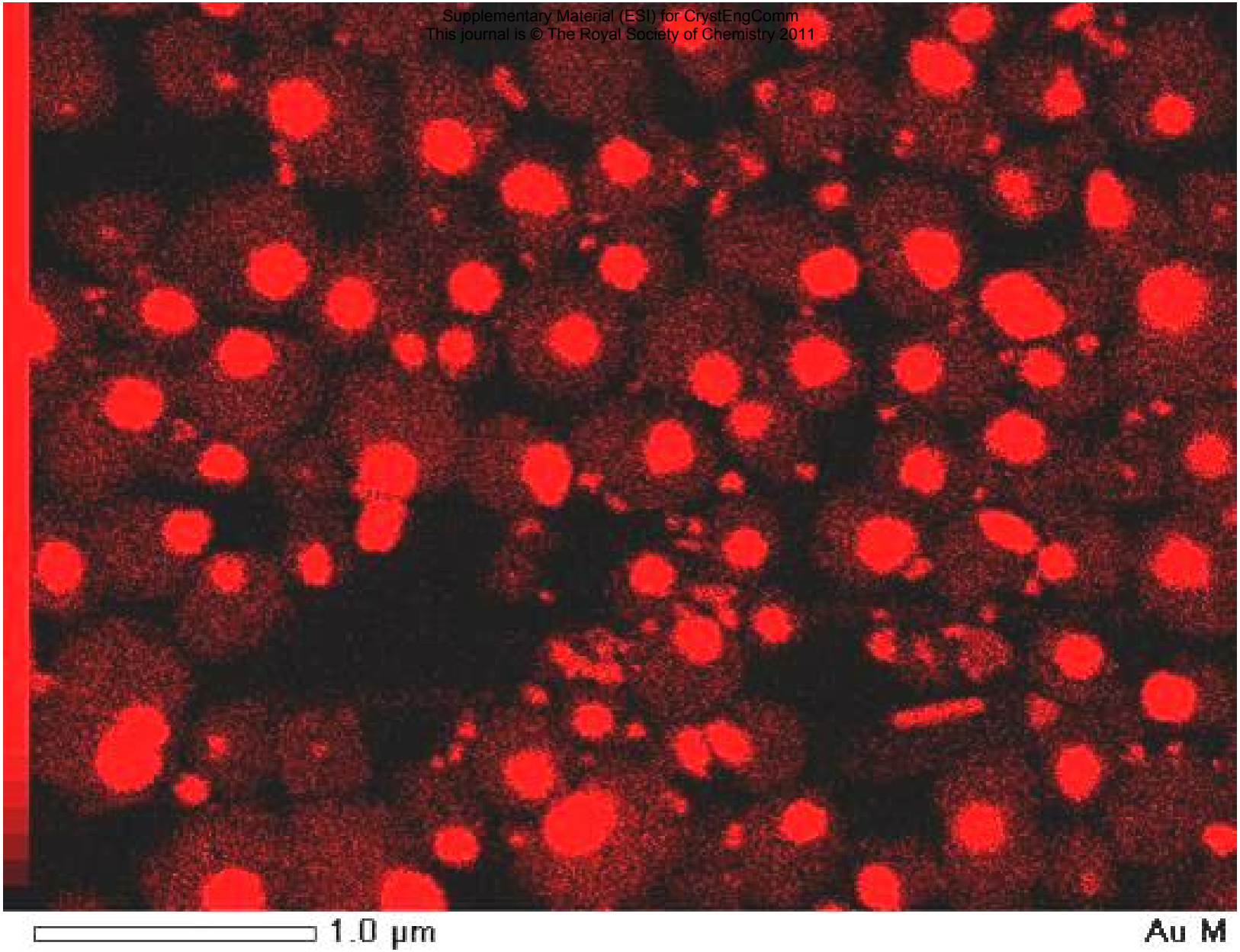


Fig. S7. Expanded Fig. 5b3.

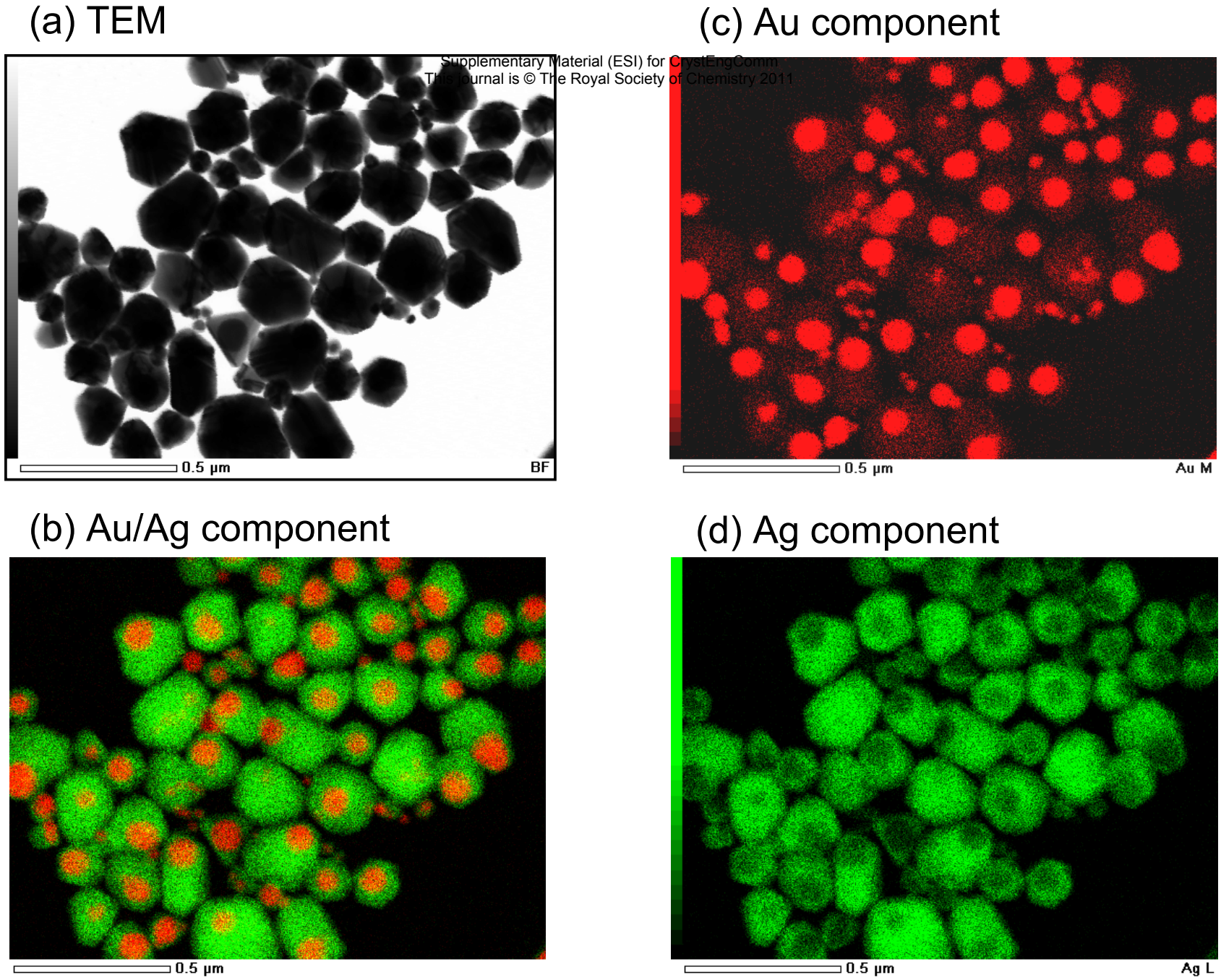


Fig. S8. Typical TEM and TEM–EDS images data obtained after heating for 60 min. The $HAuCl_4$ concentration for the preparation Au seeds was 1.2 mM.

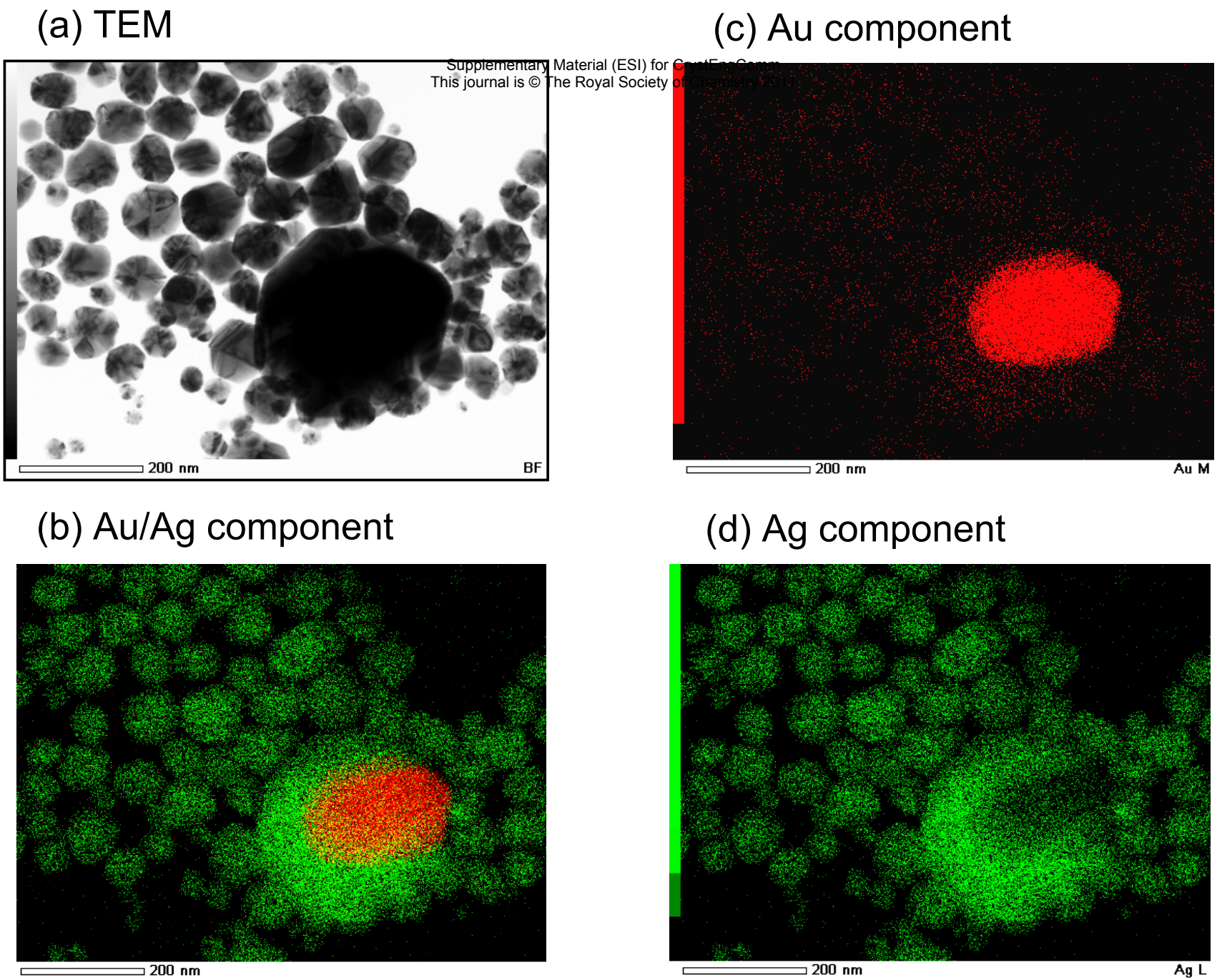


Fig. S9. Typical TEM and TEM–EDS images data obtained after heating for 60 min. The $HAuCl_4$ concentration for the preparation Au seeds was 4.8 mM.

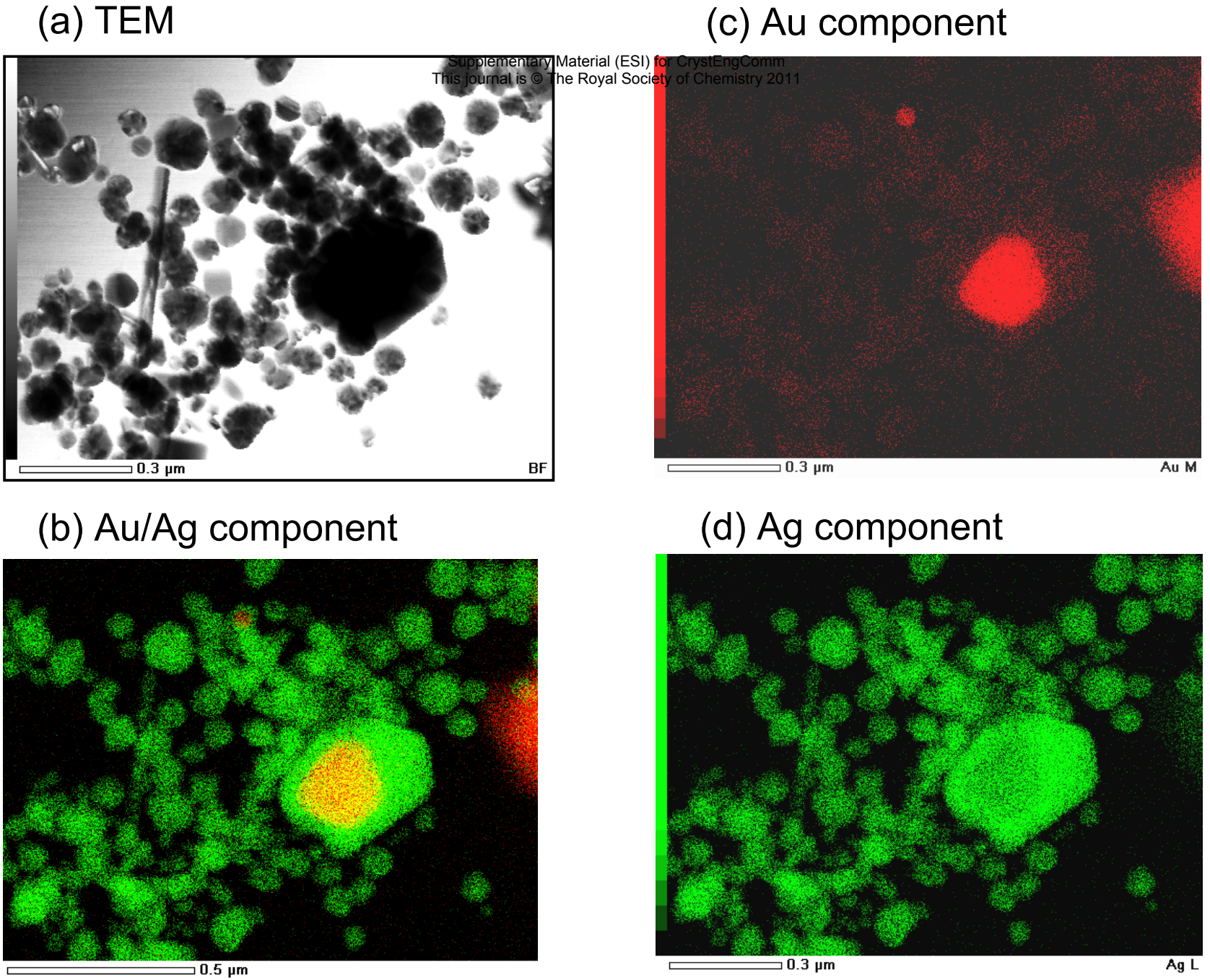


Fig. S10. Typical TEM and TEM–EDS images data obtained after heating for 60 min. The solution temperature was 170 ^{o}C.

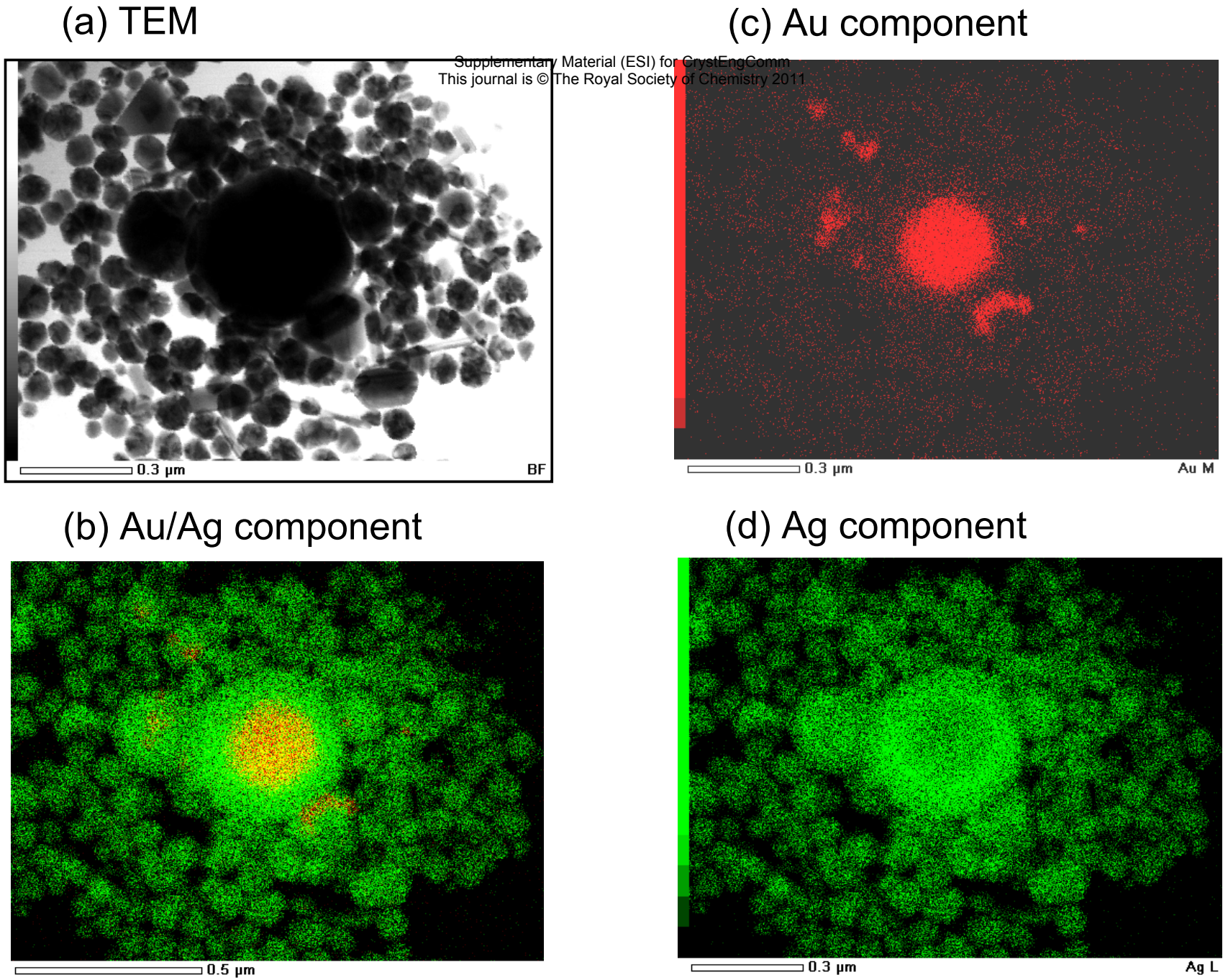


Fig. S11. Typical TEM and TEM–EDS images data obtained after heating for 60 min. The solution temperature was 190 °C.

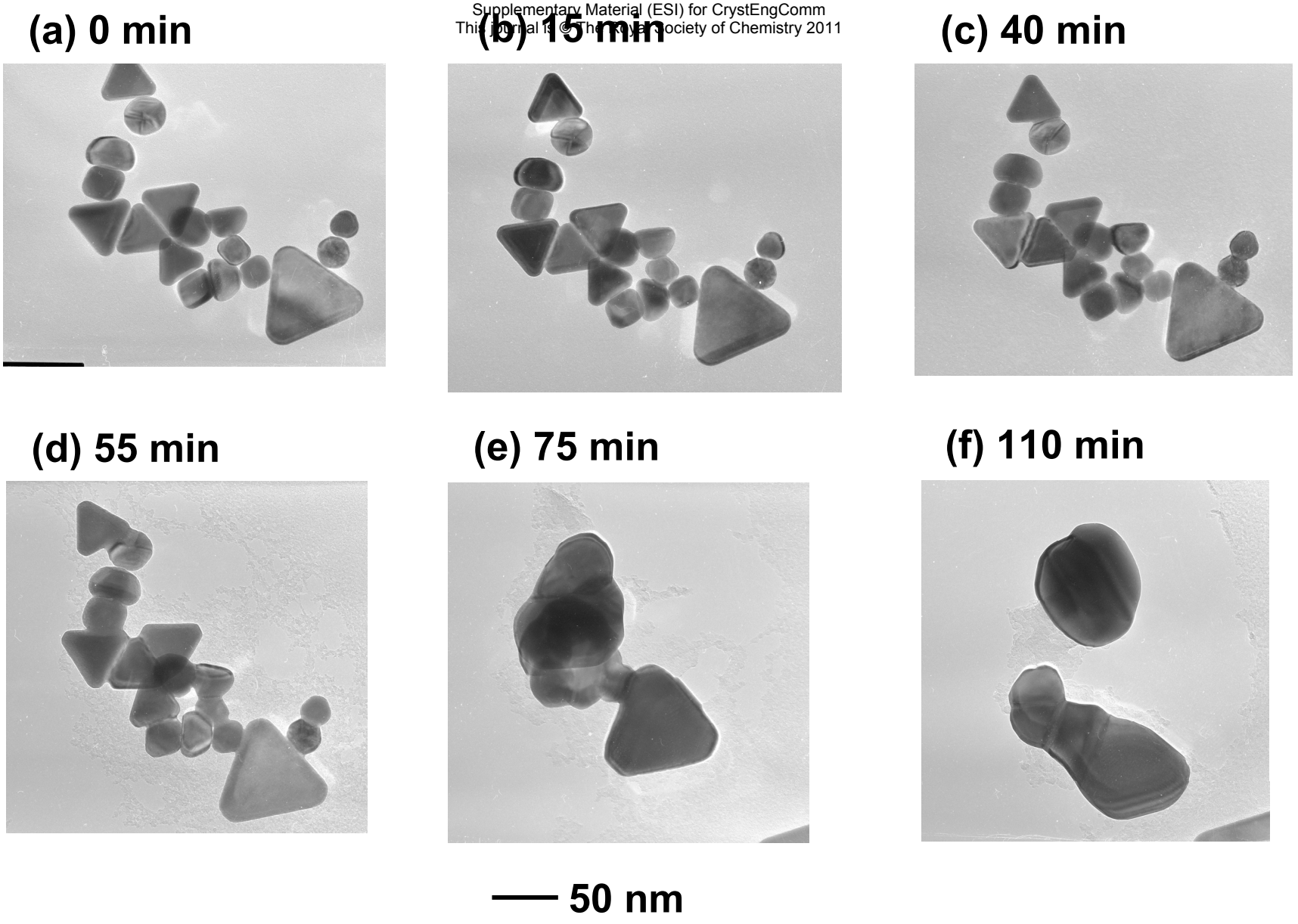


Fig. S12. Shape and size changes of polygonal Au nanocrystals under electron beam irradiation for various irradiation times.

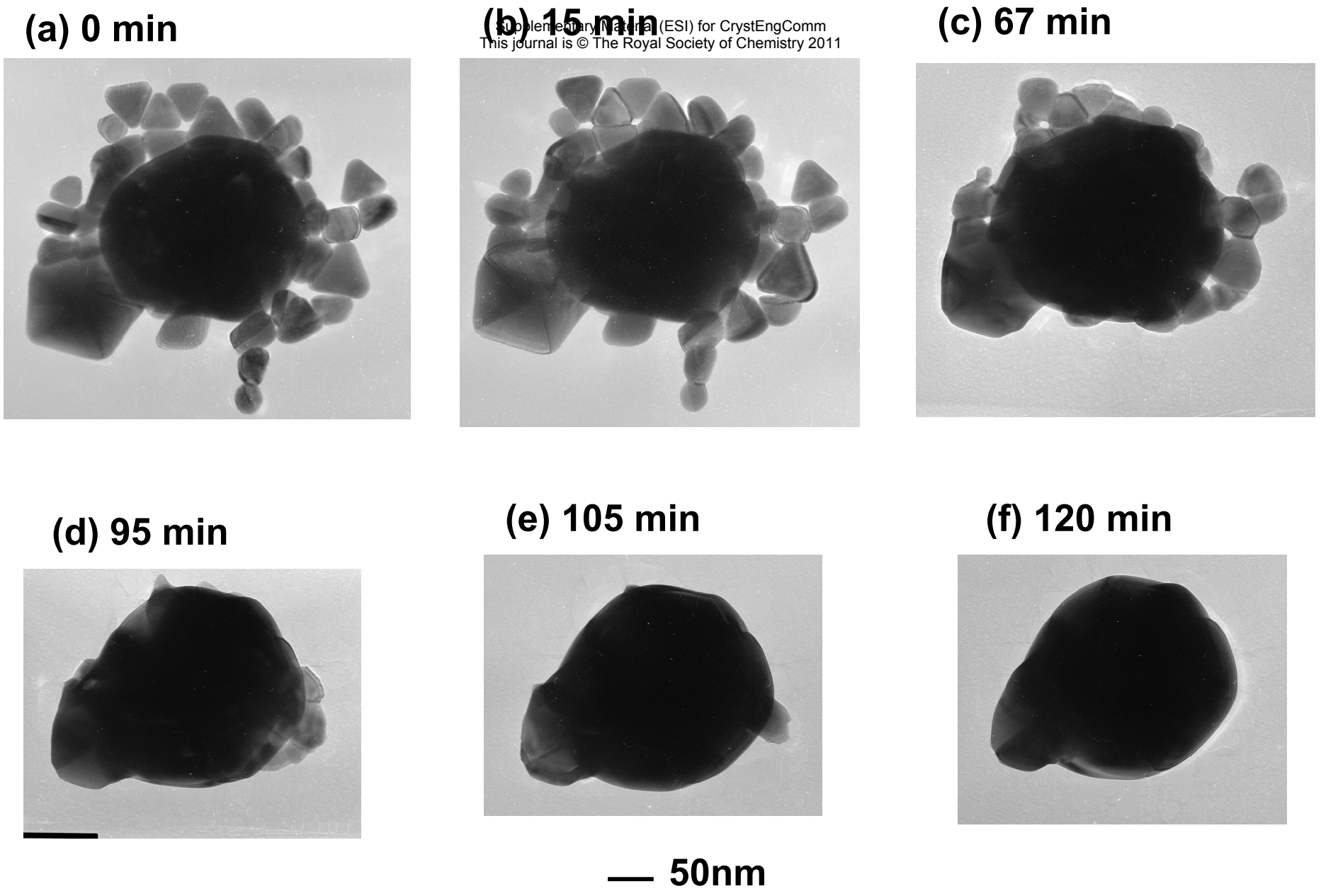


Fig. S13. Shape and size changes of polygonal Au nanocrystals under electron beam irradiation for various irradiation times. Scale bars are 50 nm in all images.

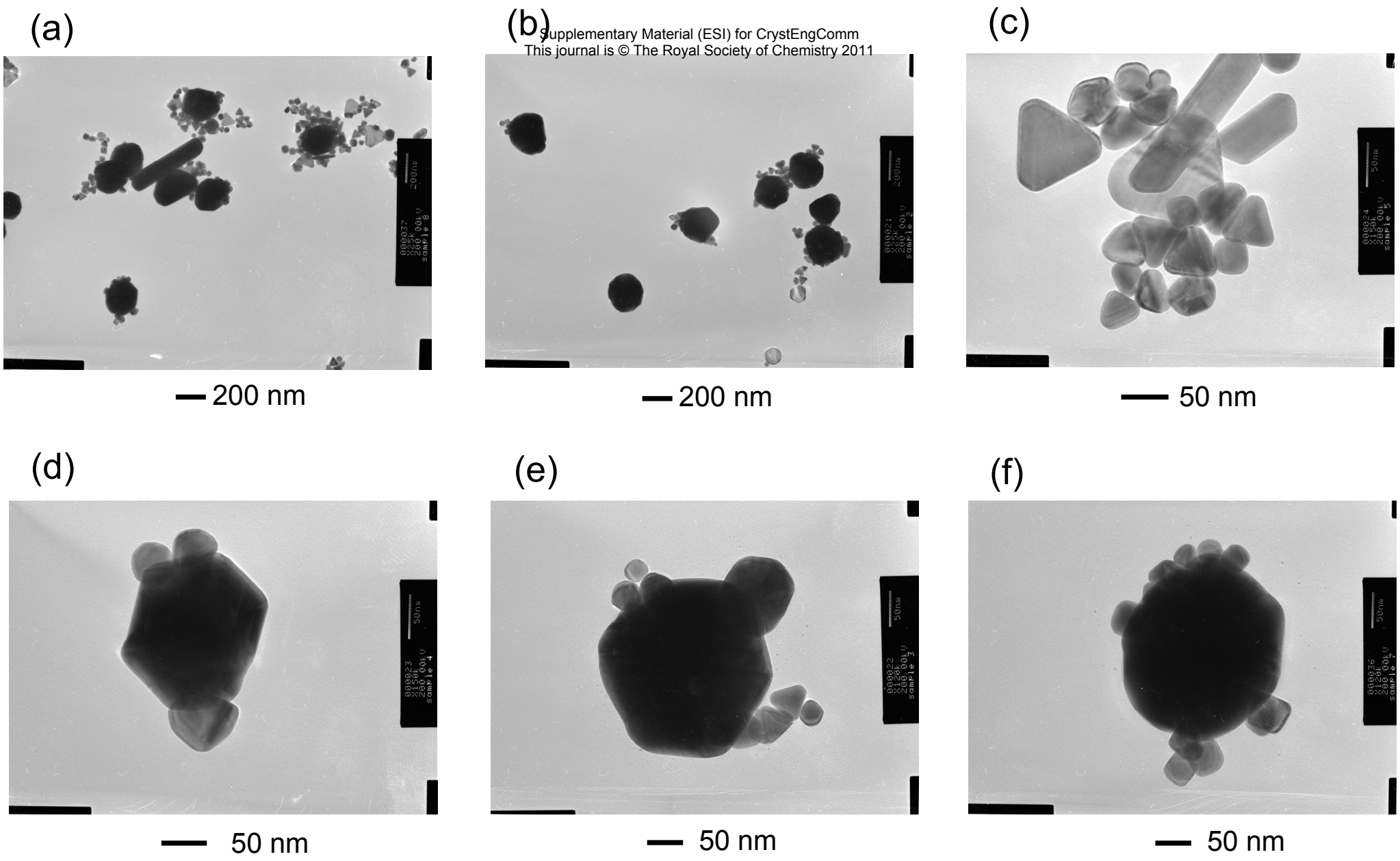


Fig. S14. TEM images of Au nanoparticles prepared by oil-bath heating in EG at 150°C for 10 min under bubbling Ar gas.