Appendix F

TEM Analyses of Test-1 Day-30 Water Samples

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This appendix presents TEM images and diffraction patterns for suspended matter observed in the Test-1 solution that was extracted on Day 30. Small sample bottles of test solution were provided to the TEM laboratory, from which single drops of solution were extracted for examination. Settled precipitate was visible in most of the bottles that were transferred for TEM, and although the vials were not intentionally mixed before extracting droplets from the supernate, the semisolid particles visible in the following images represent suspended precipitate. The primary objective of TEM analysis is to determine whether the solids have a physical structure that is more consistent with microcrystalline flocculent or with amorphous hydrated gels. The TEM sample holder consists of a lacy carbon-coated grid that serves to suspend a liquid sample so that the diagnostic beam can be transmitted through the sample without interference from the sample mount. The sample grid is evident in many of the following images as a network of large sharply defined structures of uniform shading. In contrast, the suspended solids appear to be very irregular, with much more color variation and evidence of structure on a much smaller scale than the sample grid.

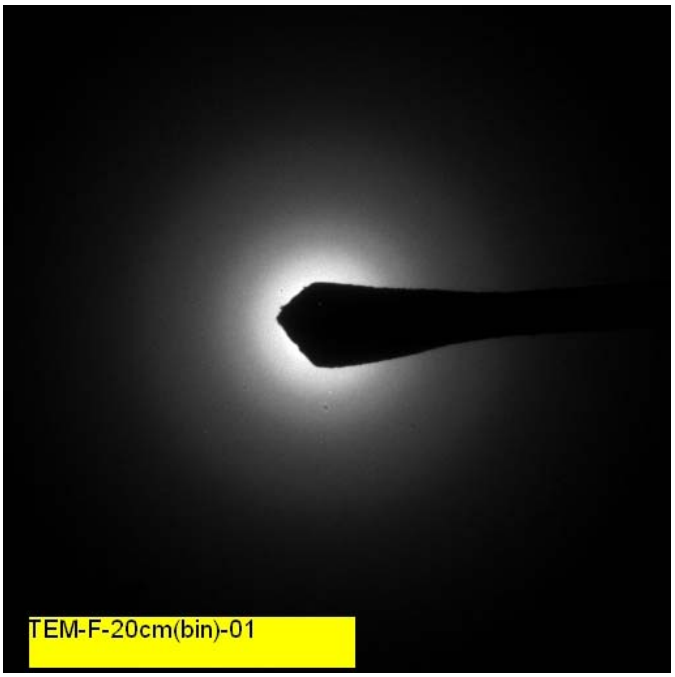

Figure F-1. TEM image from the Day-30 filtered sample (F-20cm-bin-01), magnified 20 times.

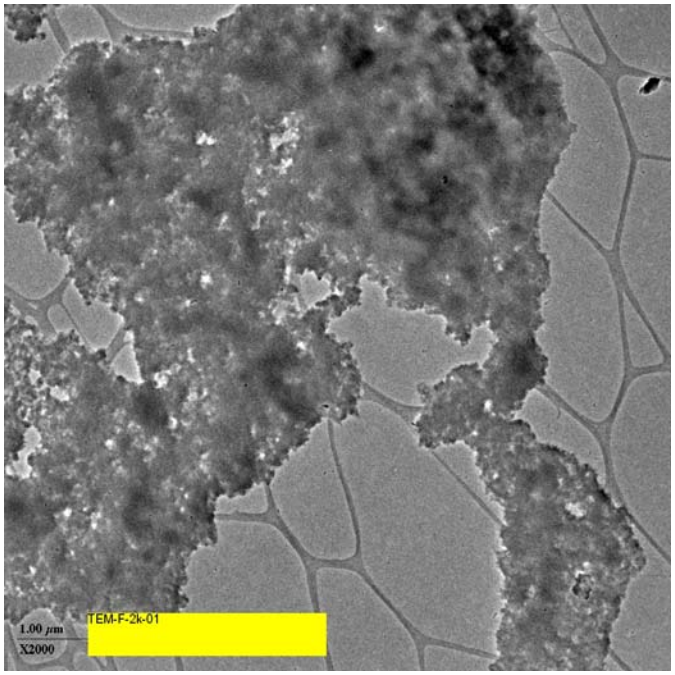

Figure F-2. Electron micrograph (TEM-F-2K-01) from the Day-30 filtered sample (F-20cm-bin-01), magnified 2000 times.

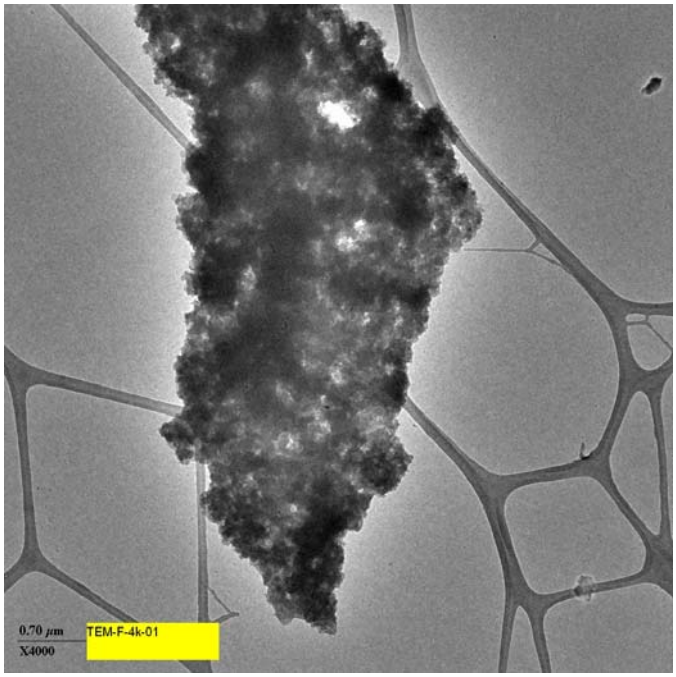

Figure F-3. Electron micrograph (TEM-F-4K-01) from the Day-30 filtered sample (F-20cm-bin-01), magnified 4000 times.

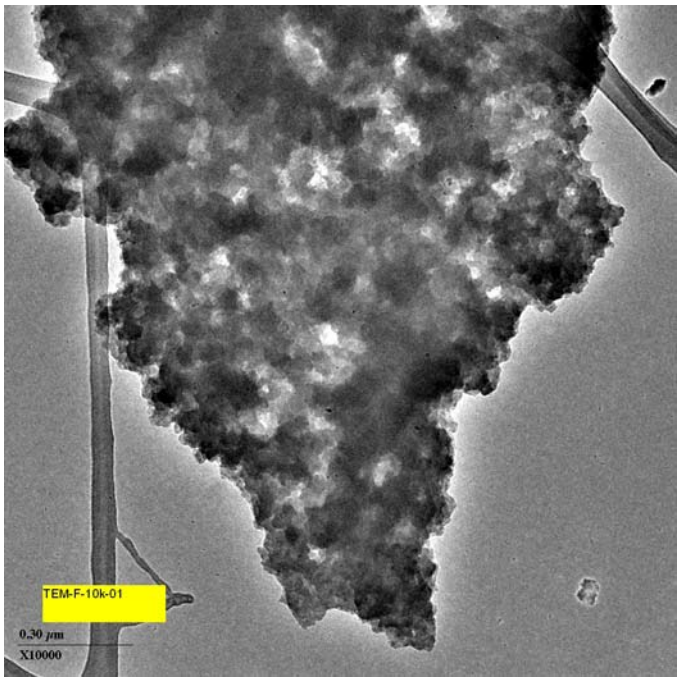

Figure F-4. Electron micrograph (TEM-F-10K-01) from the Day-30 filtered sample (F-20cm-bin-01), magnified 10,000 times.

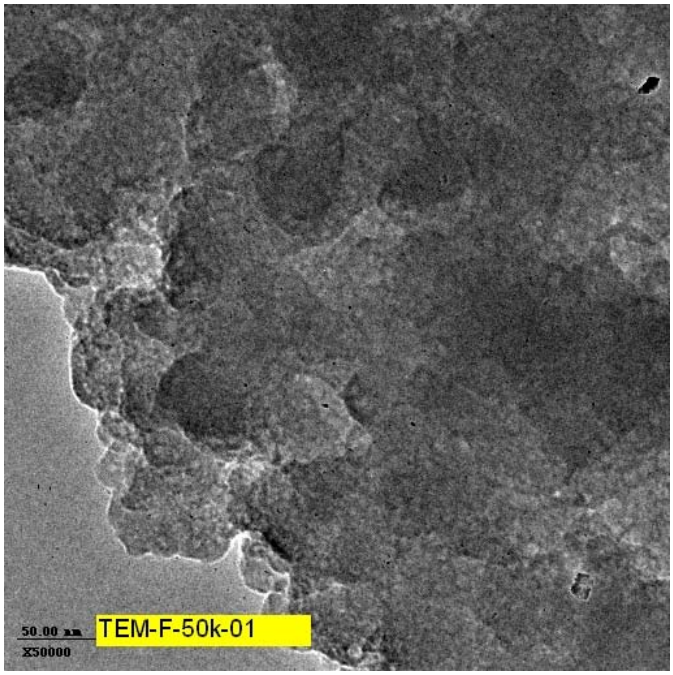

Figure F-5. Electron micrograph (TEM-F-50K-01) from the Day-30 filtered sample (F-20cm-bin-01), magnified 50,000 times.

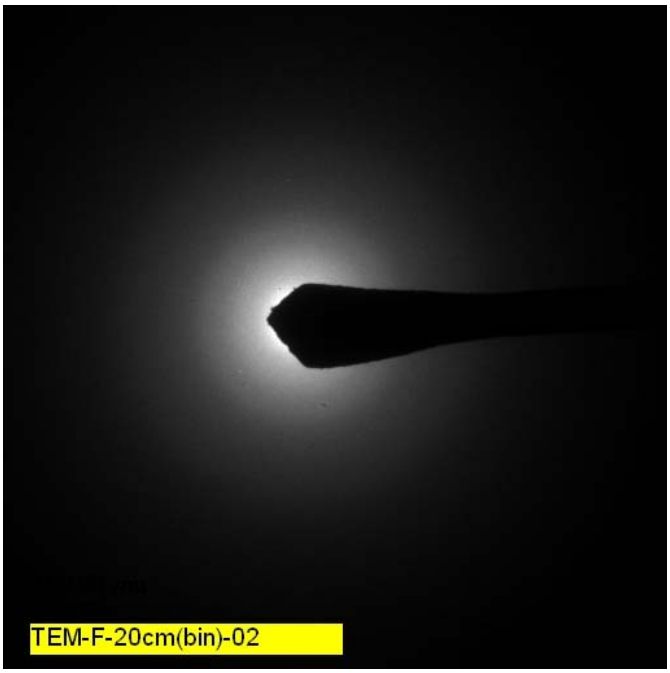

Figure F-6. Electron micrograph from the Day-30 filtered sample (TEM-F-20cm-bin-02), magnified 20 times.

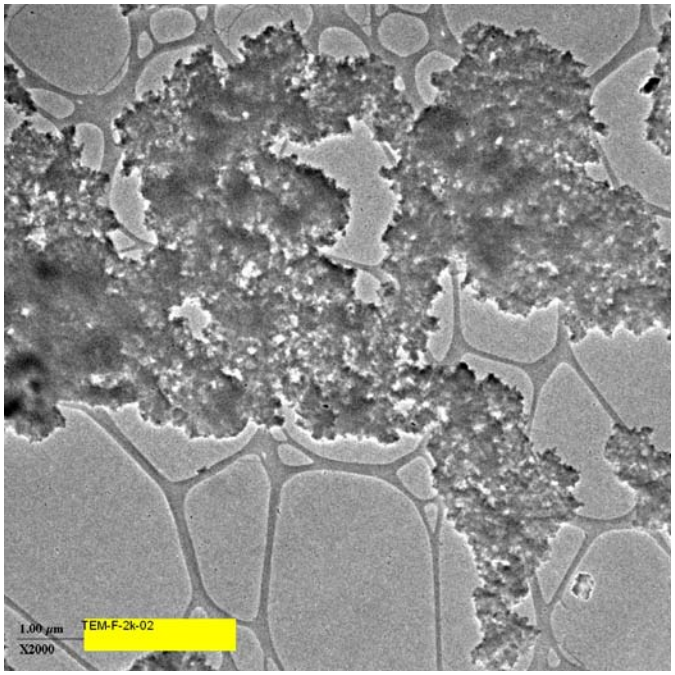

Figure F-7. Electron micrograph (TEM-F-2K-02) from the Day-30 filtered sample (TEM-F-20cm-bin-02), magnified 2000 times.

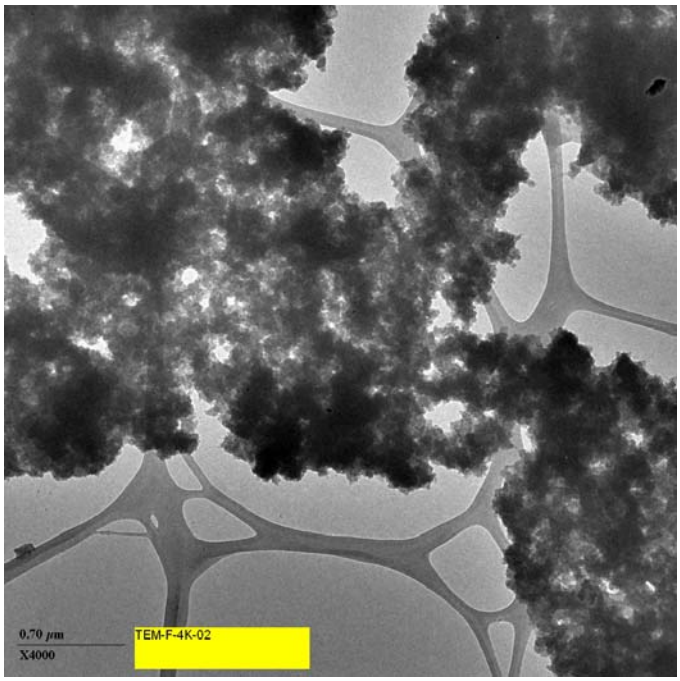

Figure F-8. Electron micrograph (TEM-F-4K-02) from the Day-30 filtered sample (TEM-F-20cm-bin-02), magnified 4000 times.

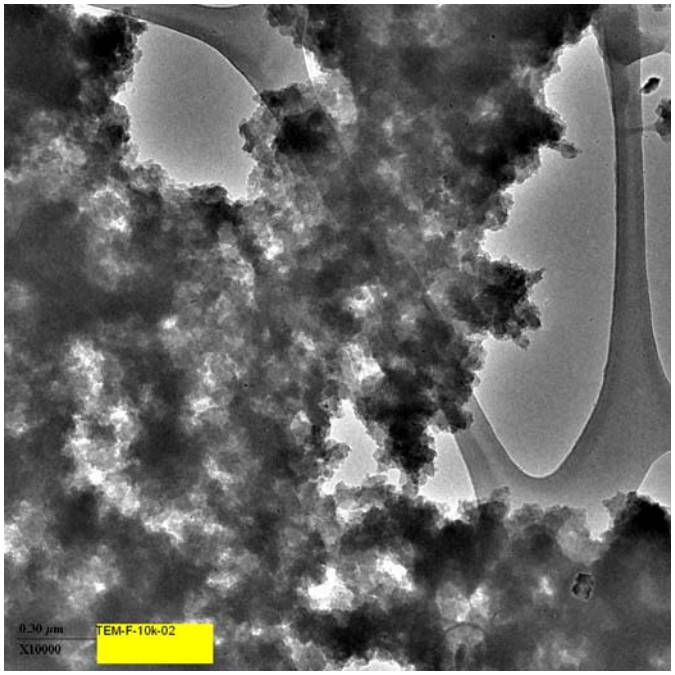

Figure F-9. Electron micrograph (TEM-F-10K-02) from the Day-30 filtered sample (TEM-F-20cm-bin-02), magnified 10,000 times.

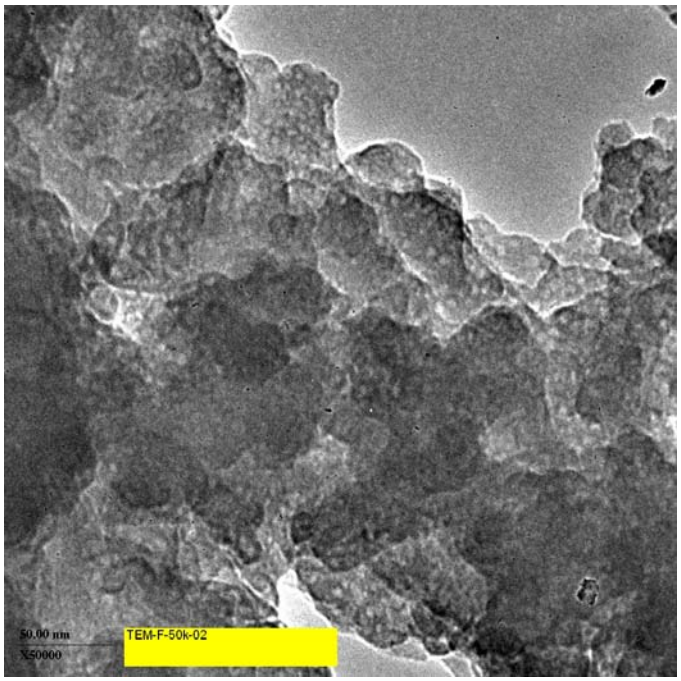

Figure F-10. Electron micrograph (TEM-F-50K-02) from the Day-30 filtered sample (TEM-F-20cm-bin-02), magnified 50,000 times.

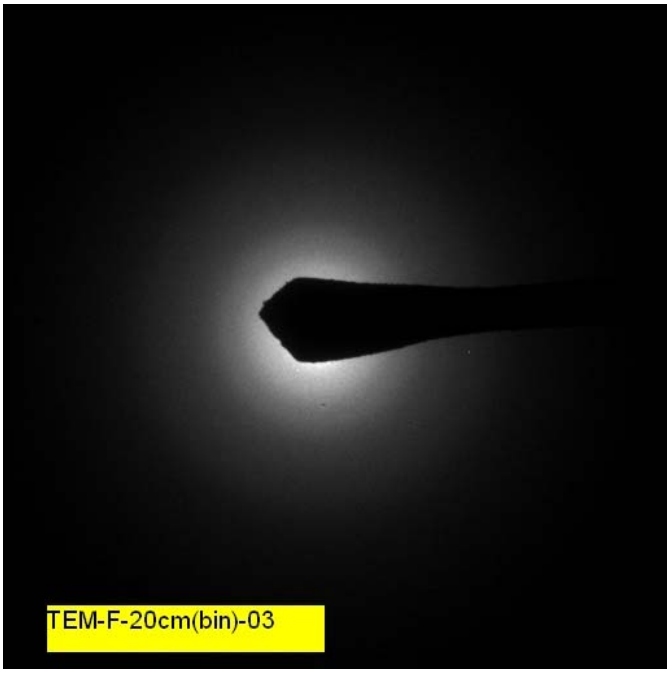

Figure F-11. TEM image from the Day-30 filtered sample (TEM-F-20cm-bin-03), magnified 20 times.

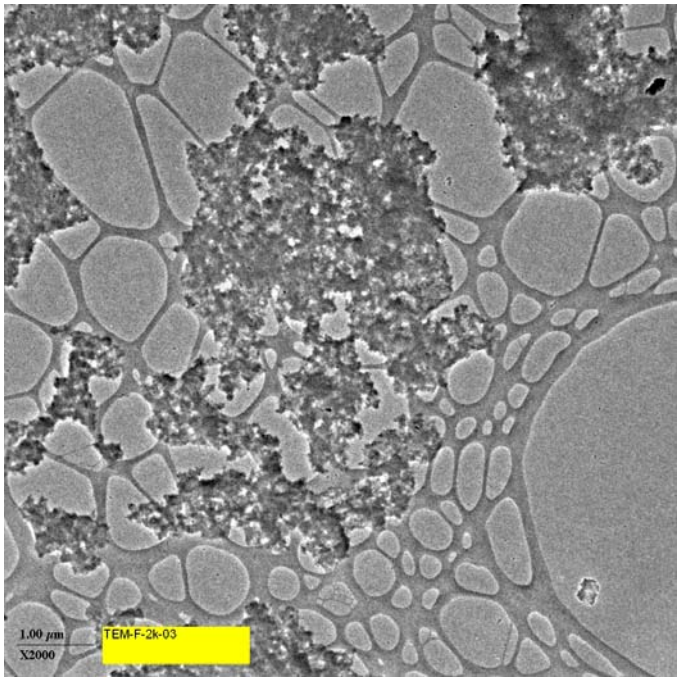

Figure F-12. Electron micrograph (TEM-F-2K-03) from the Day-30 filtered sample (TEM-F-20cm-bin-03), magnified 2000 times.

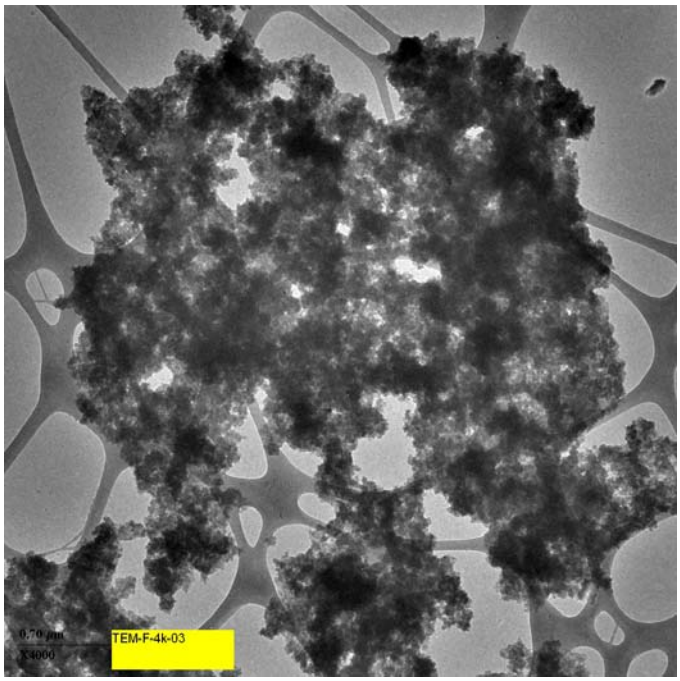

Figure F-13. Electron micrograph (TEM-F-4K-03) from the Day-30 filtered sample (TEM-F-20cm-bin-03), magnified 4000 times.

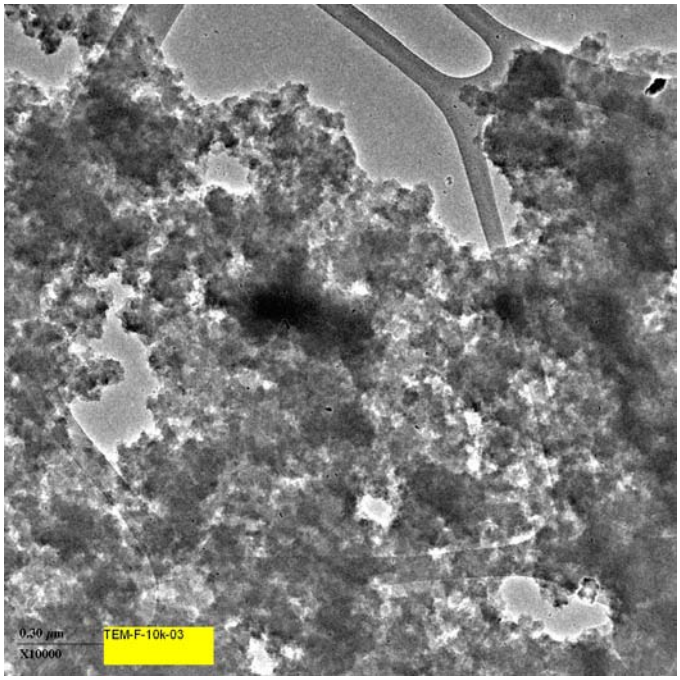

Figure F-14. Electron micrograph (TEM-F-10K-03) from the Day-30 filtered sample (TEM-F-20cm-bin-03), magnified 10,000 times.

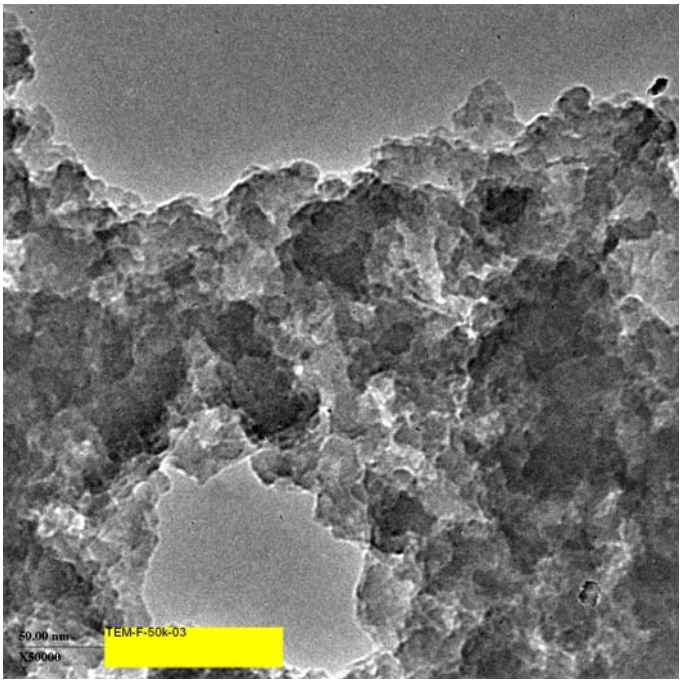

Figure F-15. Electron micrograph (TEM-F-50K-03) from the Day-30 filtered sample (TEM-F-20cm-bin-03), magnified 50,000 times.

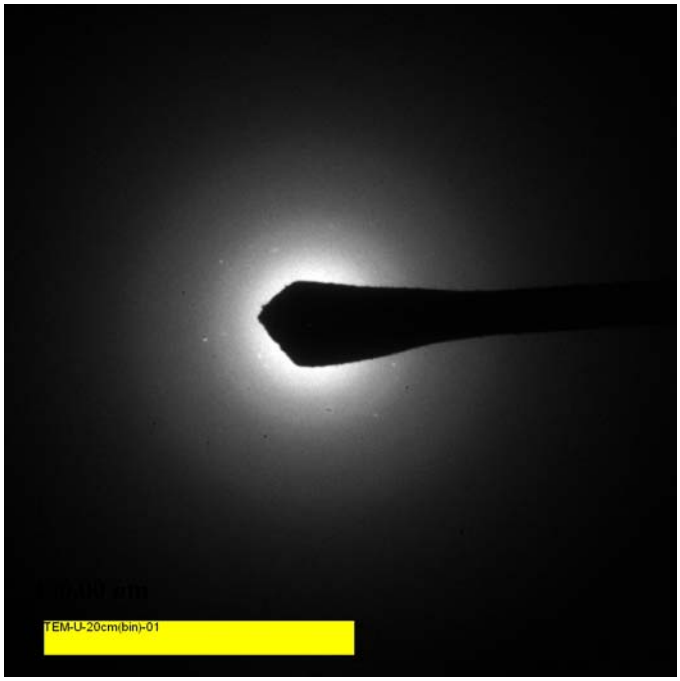

Figure F-16. TEM image from the Day-30 unfiltered sample (TEM-U-20cm-bin-01), magnified 20 times.

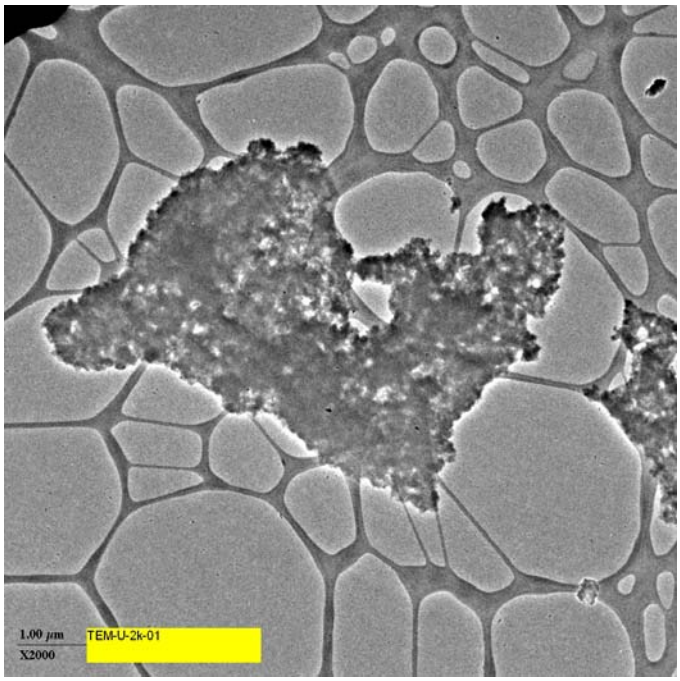

Figure F-17. Electron micrograph (TEM-U-2K-01) from the Day-30 filtered sample (TEM-U-20cm-bin-01), magnified 2000 times.

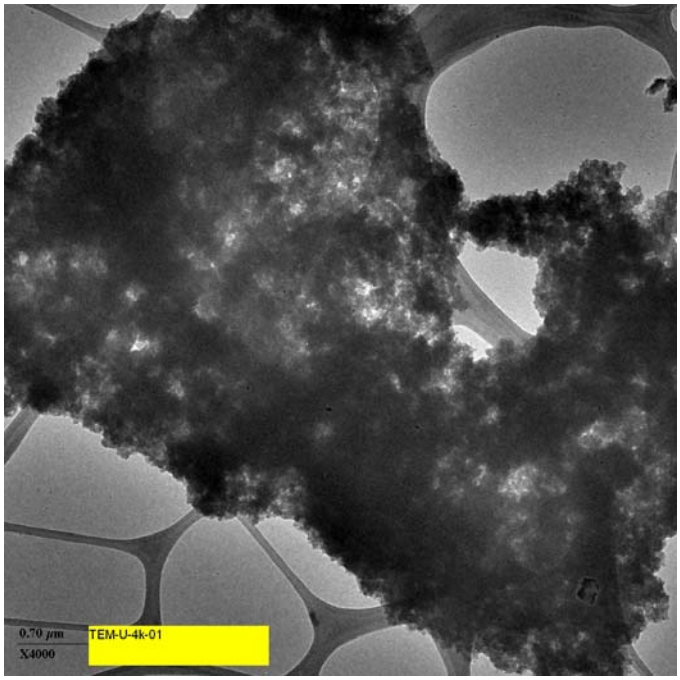

Figure F-18. Electron micrograph (TEM-U-4K-01) from the Day-30 filtered sample (TEM-U-20cm-bin-01), magnified 4000 times.

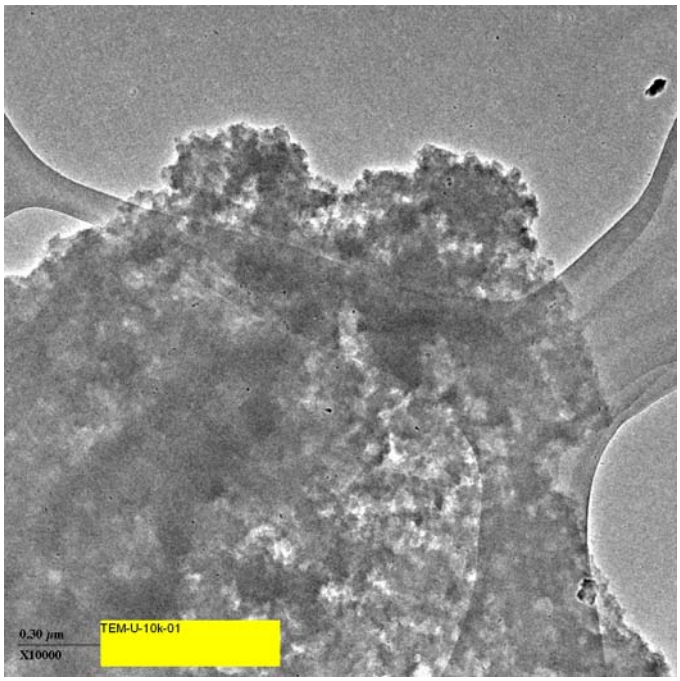

Figure F-19. Electron micrograph (TEM-U-10K-01) from the Day-30 filtered sample (TEM-U-20cm-bin-01), magnified 10,000 times.

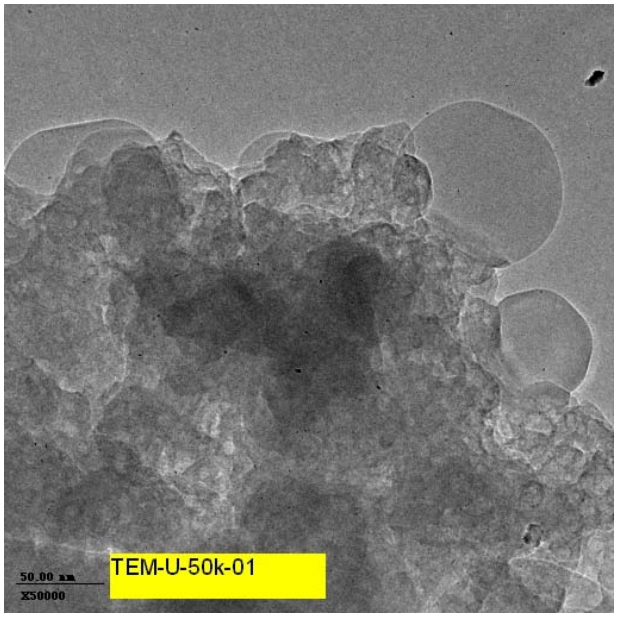

Figure F- 20. Electron micrograph (TEM-U-50K-01) from the Day-30 filtered sample (TEM-U-20cm-bin-01), magnified 50,000 times.

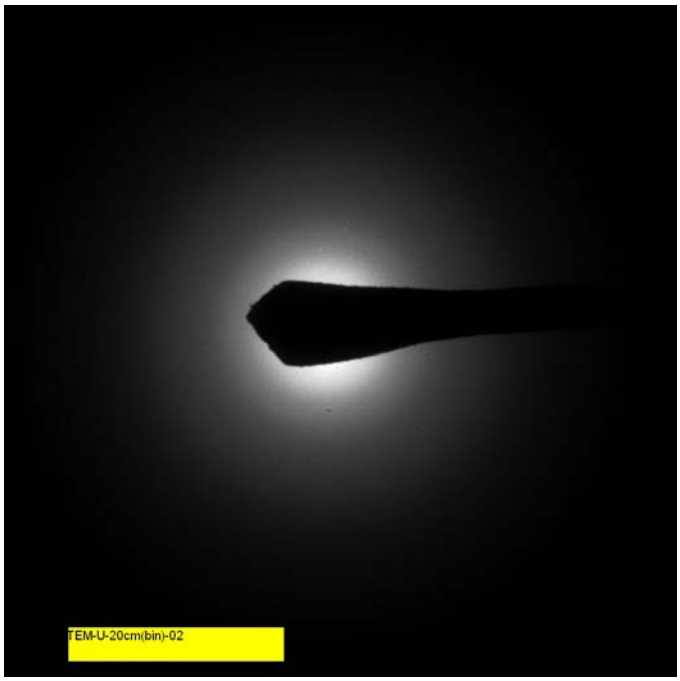

Figure F-21. TEM image from the Day-30 unfiltered sample (TEM-U-20cm-bin-02), magnified 20 times.

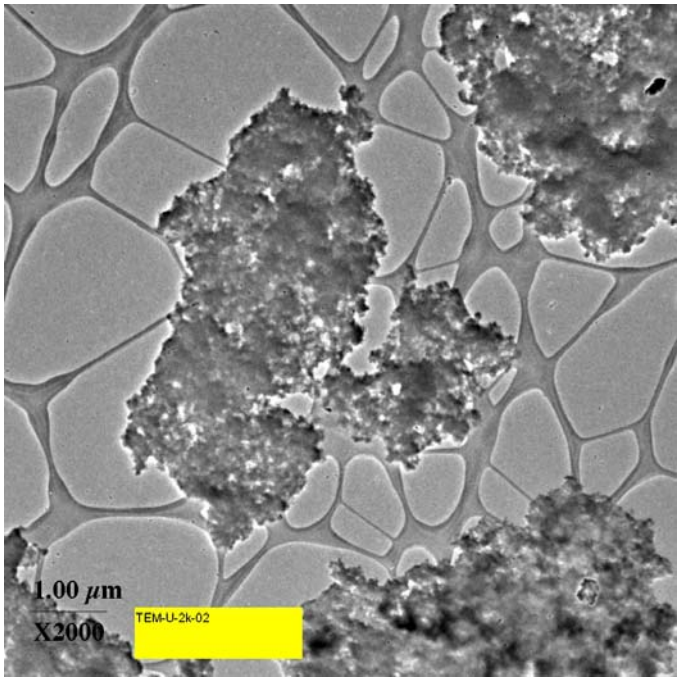

Figure F-22. Electron micrograph (TEM-U-2K-02) from the Day-30 filtered sample (TEM-U-20cm-bin-02), magnified 2000 times.

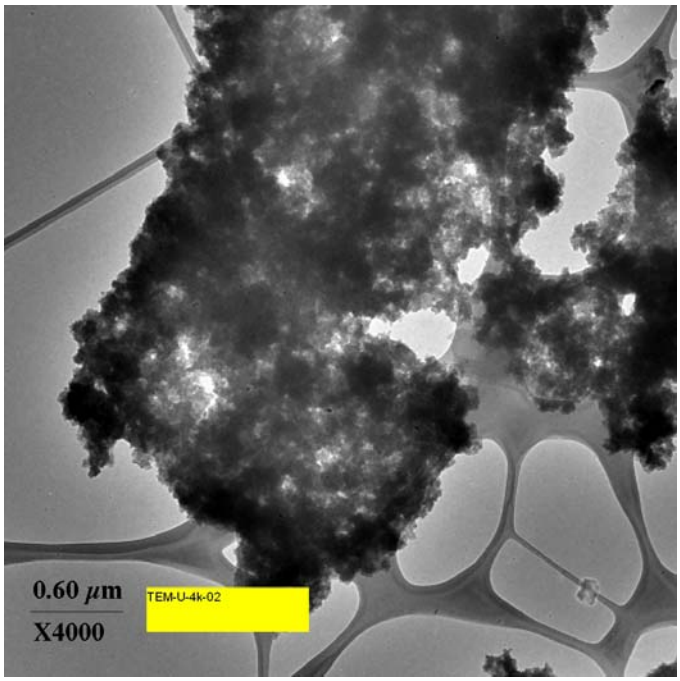

Figure F-23. Electron micrograph (TEM-U-4K-02) from the Day-30 filtered sample (TEM-U-20cm-bin-02), magnified 4000 times.

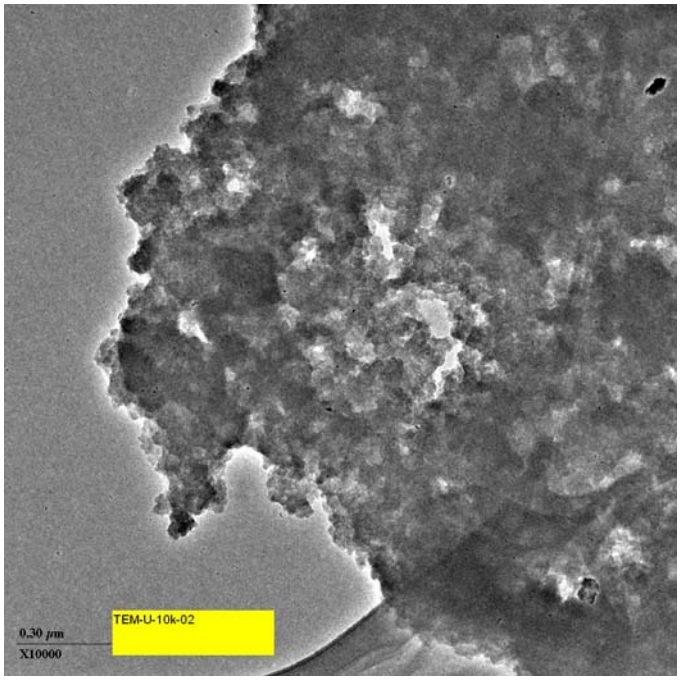

Figure F-24. Electron micrograph (TEM-U-10K-02) from the Day-30 filtered sample (TEM-U-20cm-bin-02), magnified 10,000 times.

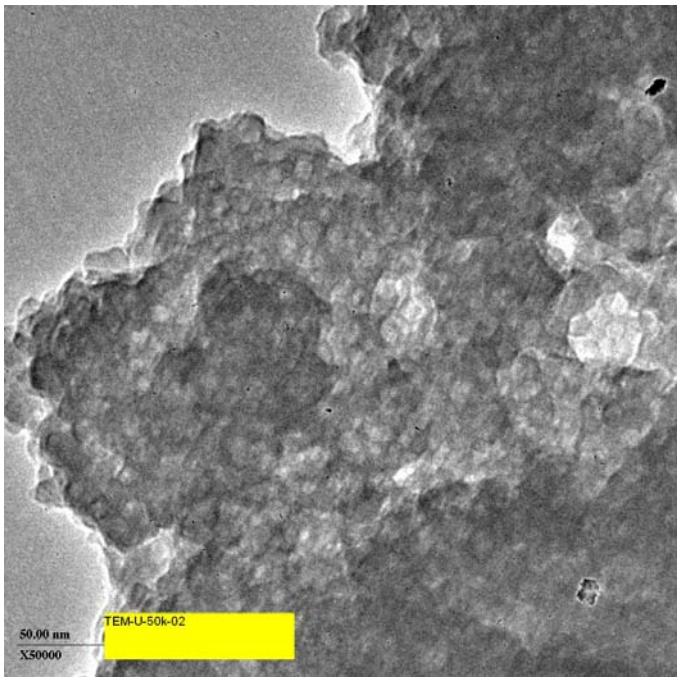

Figure F-25. Electron micrograph (TEM-U-50K-02) from the Day-30 filtered sample (TEM-U-20cm-bin-02), magnified 50,000 times.

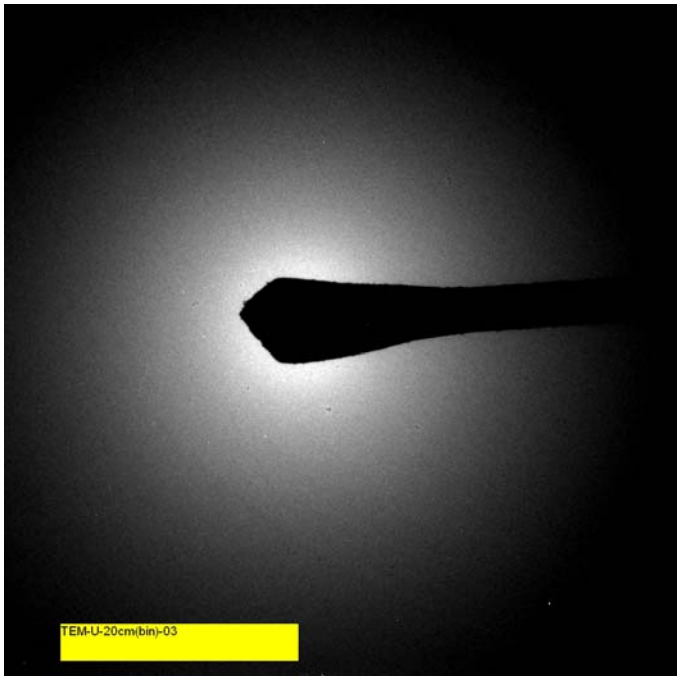

Figure F-26. TEM micrograph from the Day-30 unfiltered sample (TEM-U-20cm-bin-03), magnified 20 times.

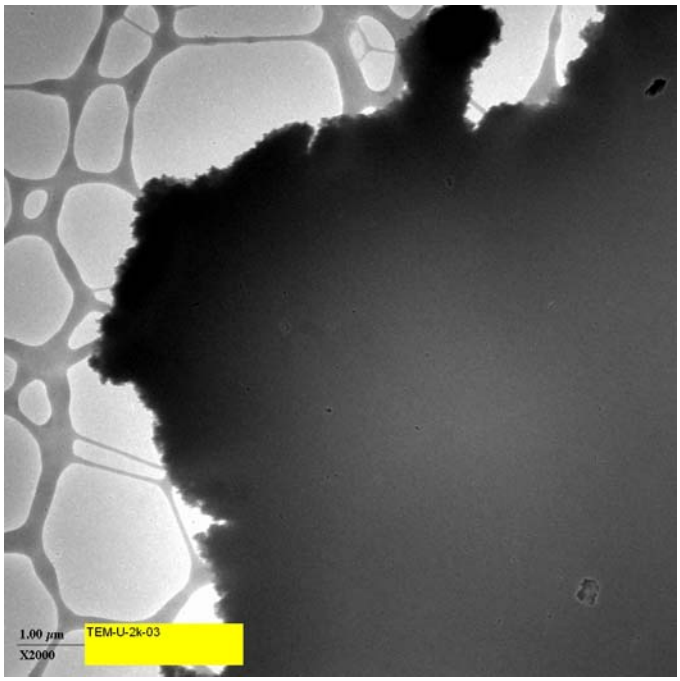

Figure F-27. Electron micrograph (TEM-U-2K-03) from the Day-30 filtered sample (TEM-U-20cm-bin-03), magnified 2000 times.

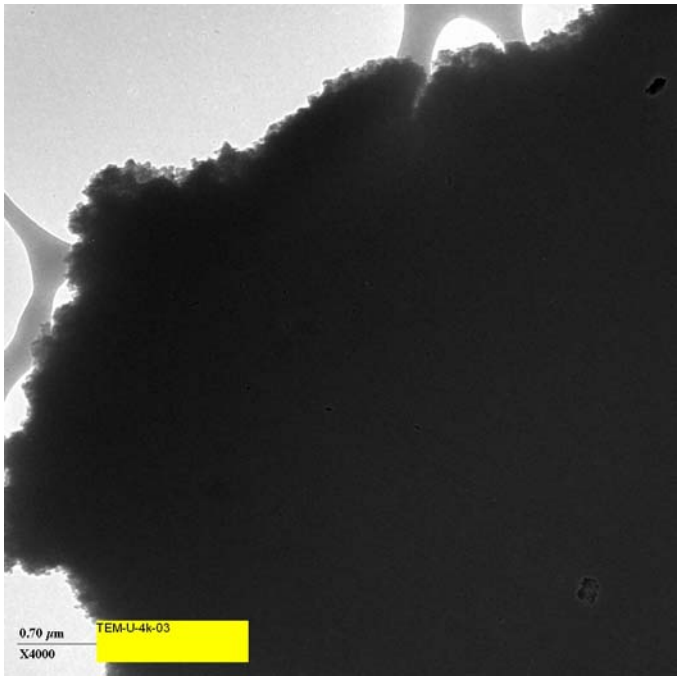

Figure F-28. Electron micrograph (TEM-U-4K-03) from the Day-30 filtered sample (TEM-U-20cm-bin-03), magnified 4000 times.

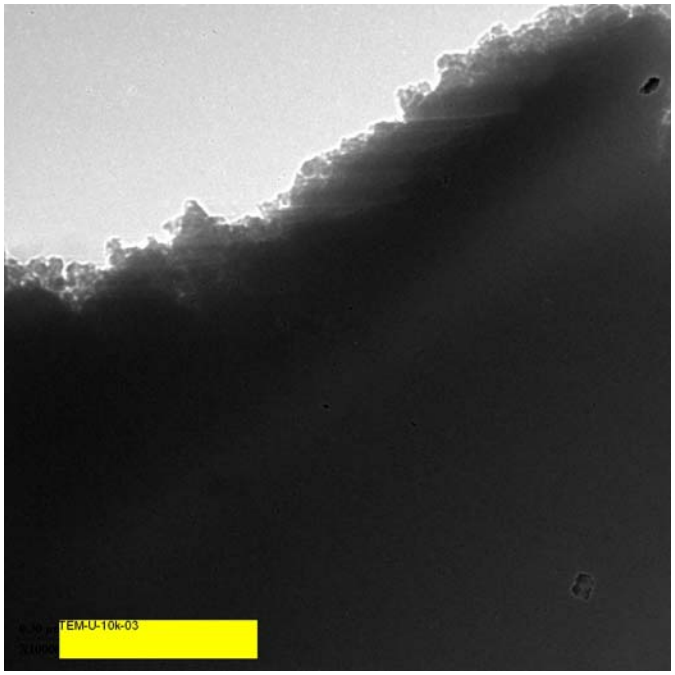

Figure F-29. Electron micrograph (TEM-U-10K-03) from the Day-30 filtered sample (TEM-U-20cm-bin-03), magnified 10,000 times.

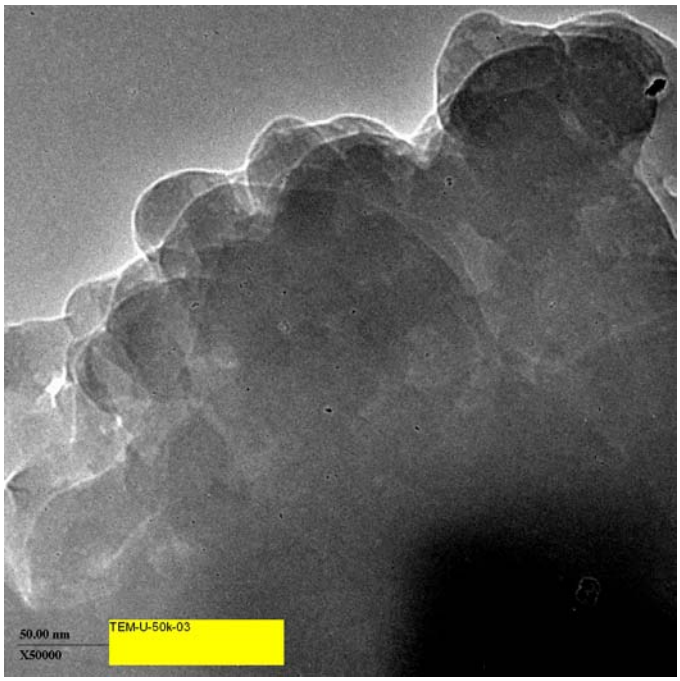

Figure F-30. Electron micrograph (TEM-U-50K-03) from the Day-30 filtered sample (TEM-U-20cm-bin-03), magnified 50,000 times.