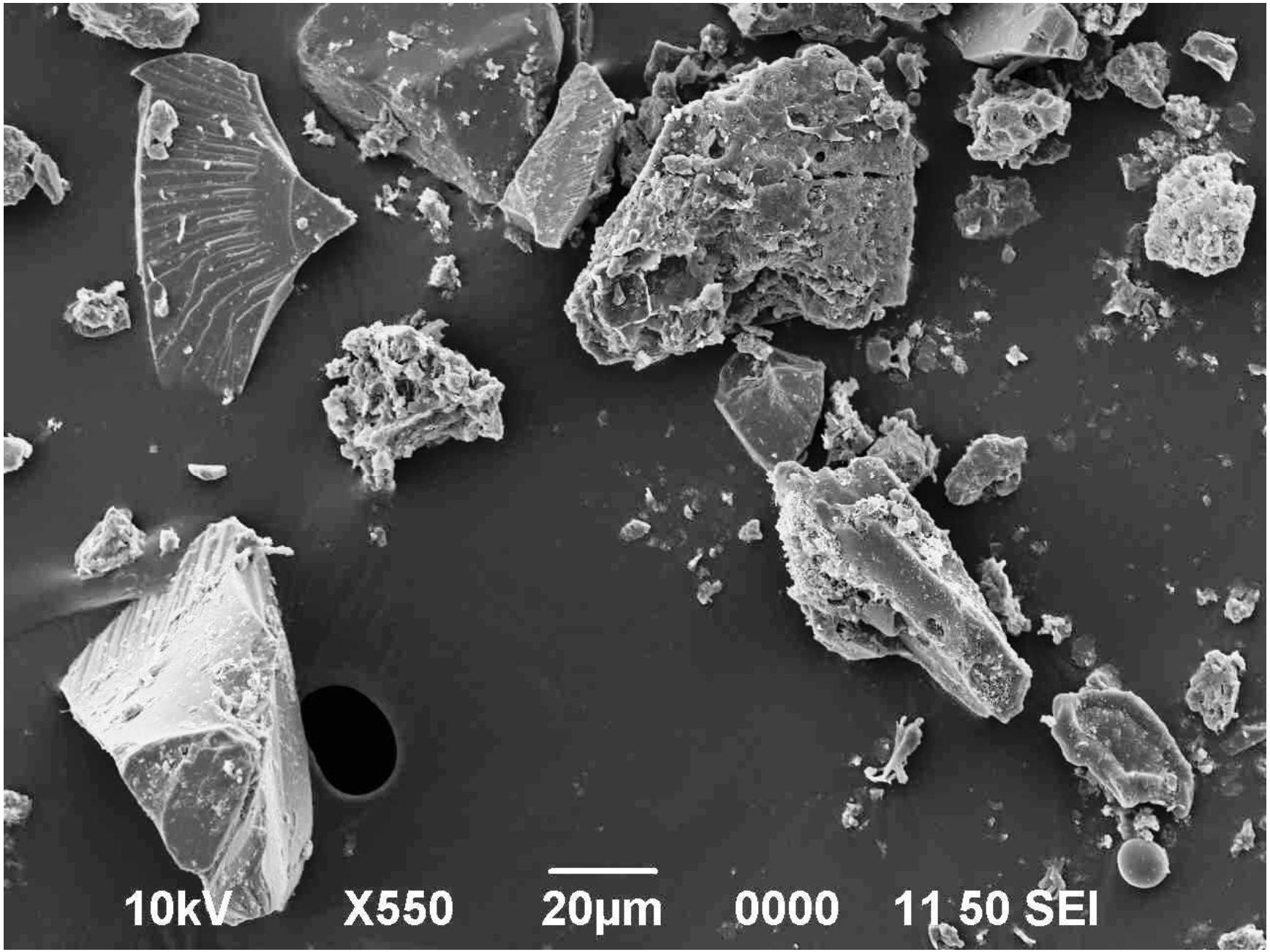
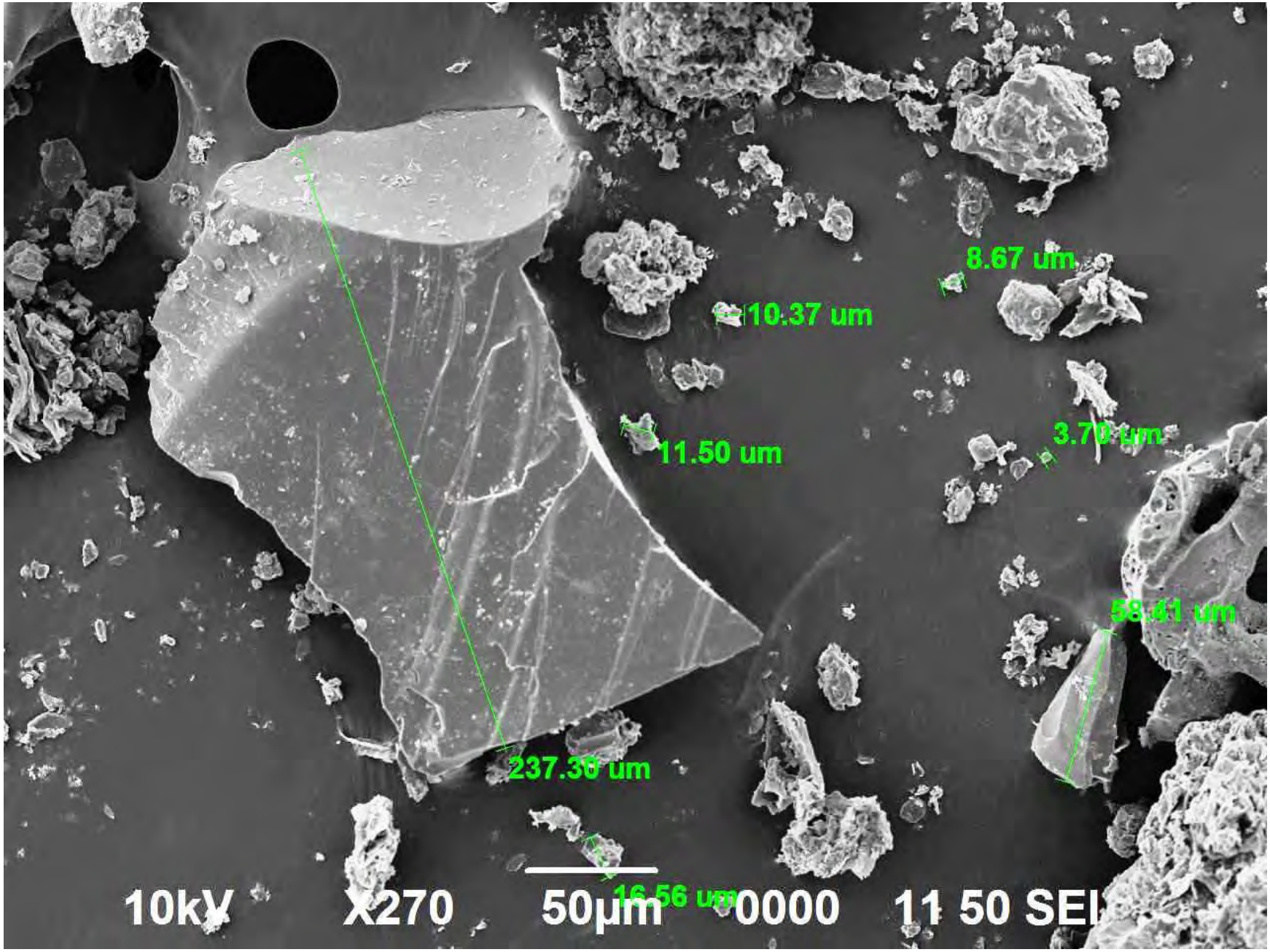
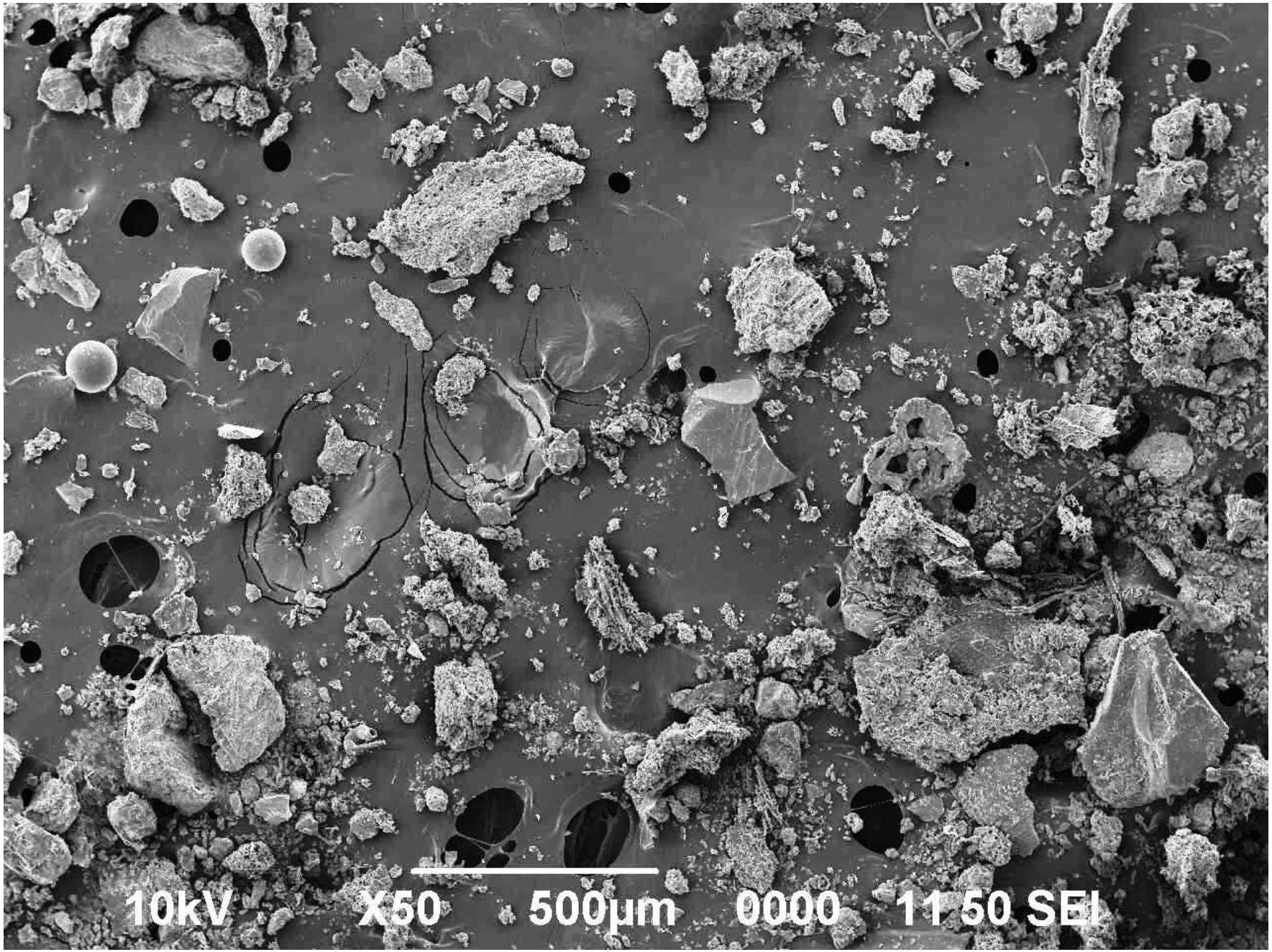
Sample #3 – 9 South Pearl St - 550X SEM SEI Microscope Image



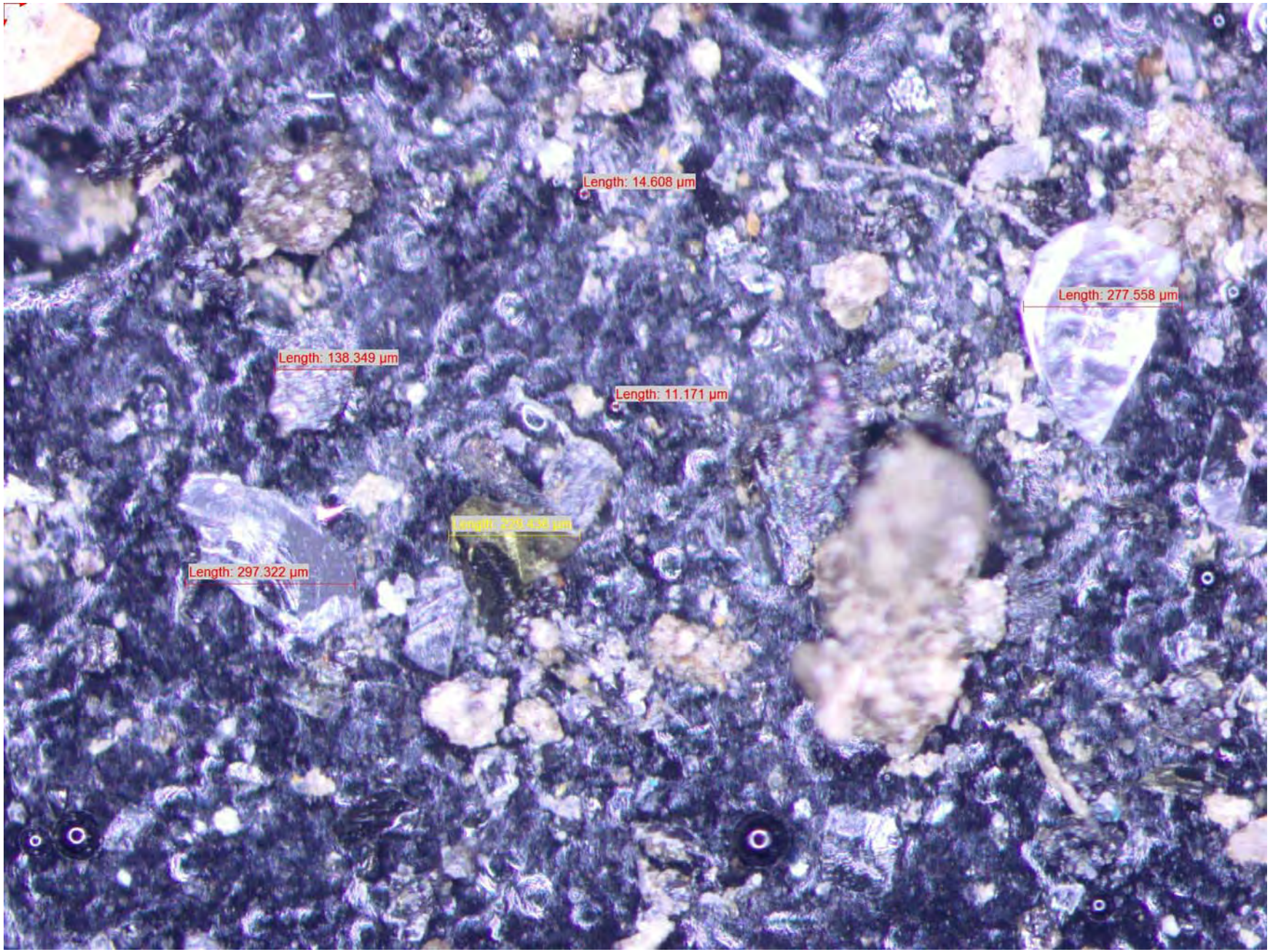
Sample #3 Cont.) – 9 South Pearl St - 270X SEM SEI Microscope Image



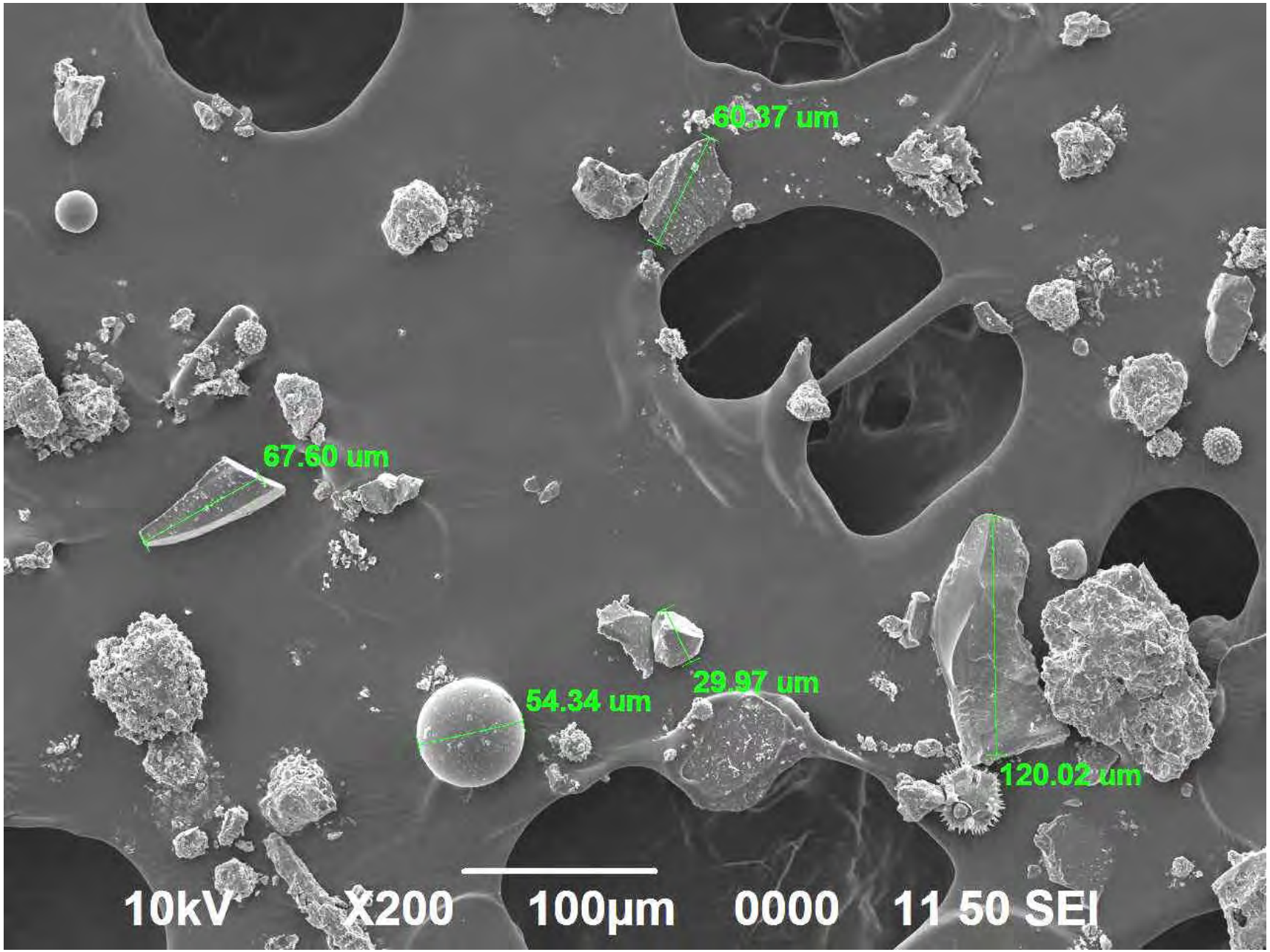
Sample #3 Cont.) – 9 South Pearl St - 50X SEM SEI Microscope Image



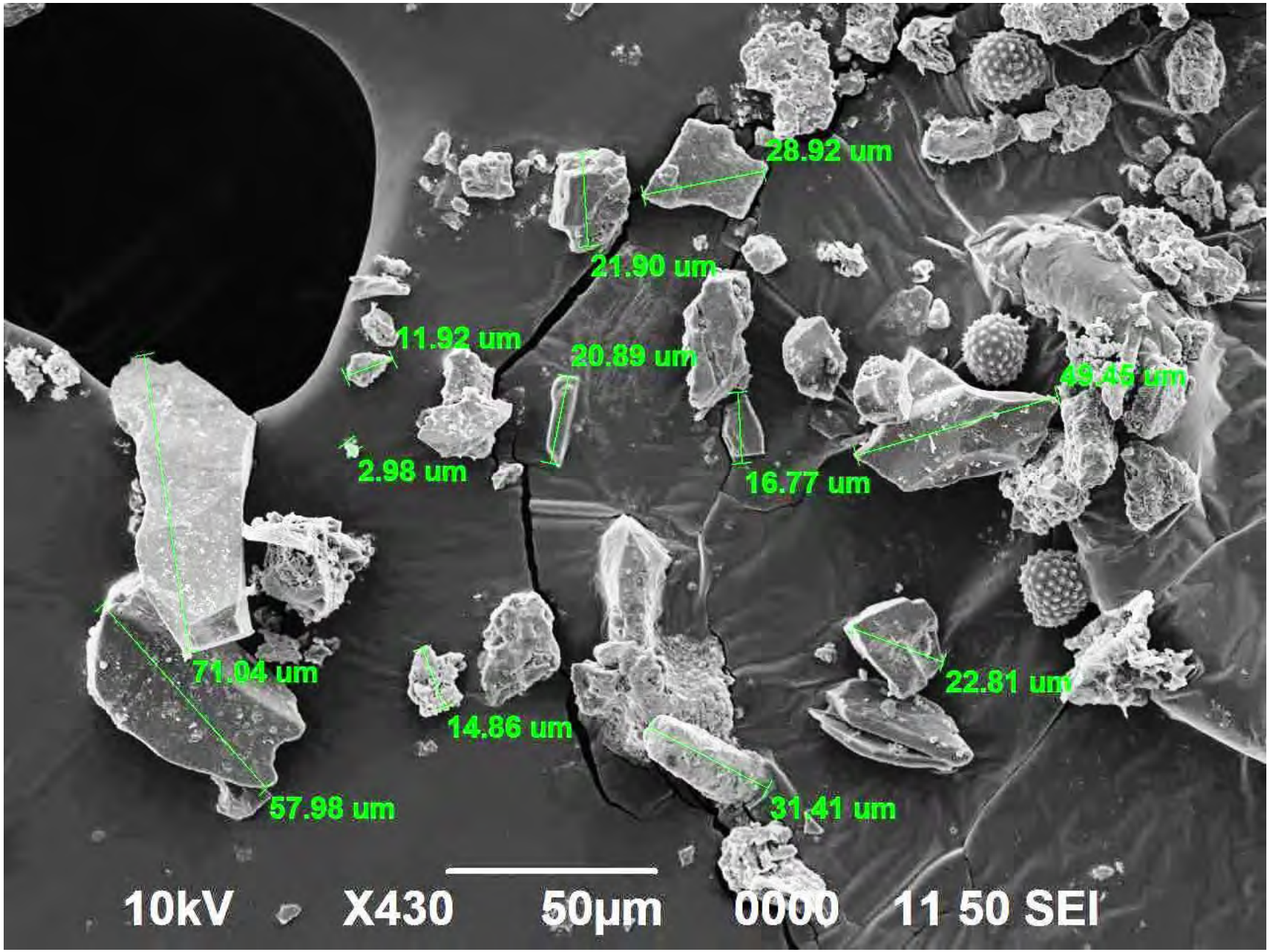
Sample #3 Cont.) – 9 South Pearl St - 63X Stereo Microscope Image



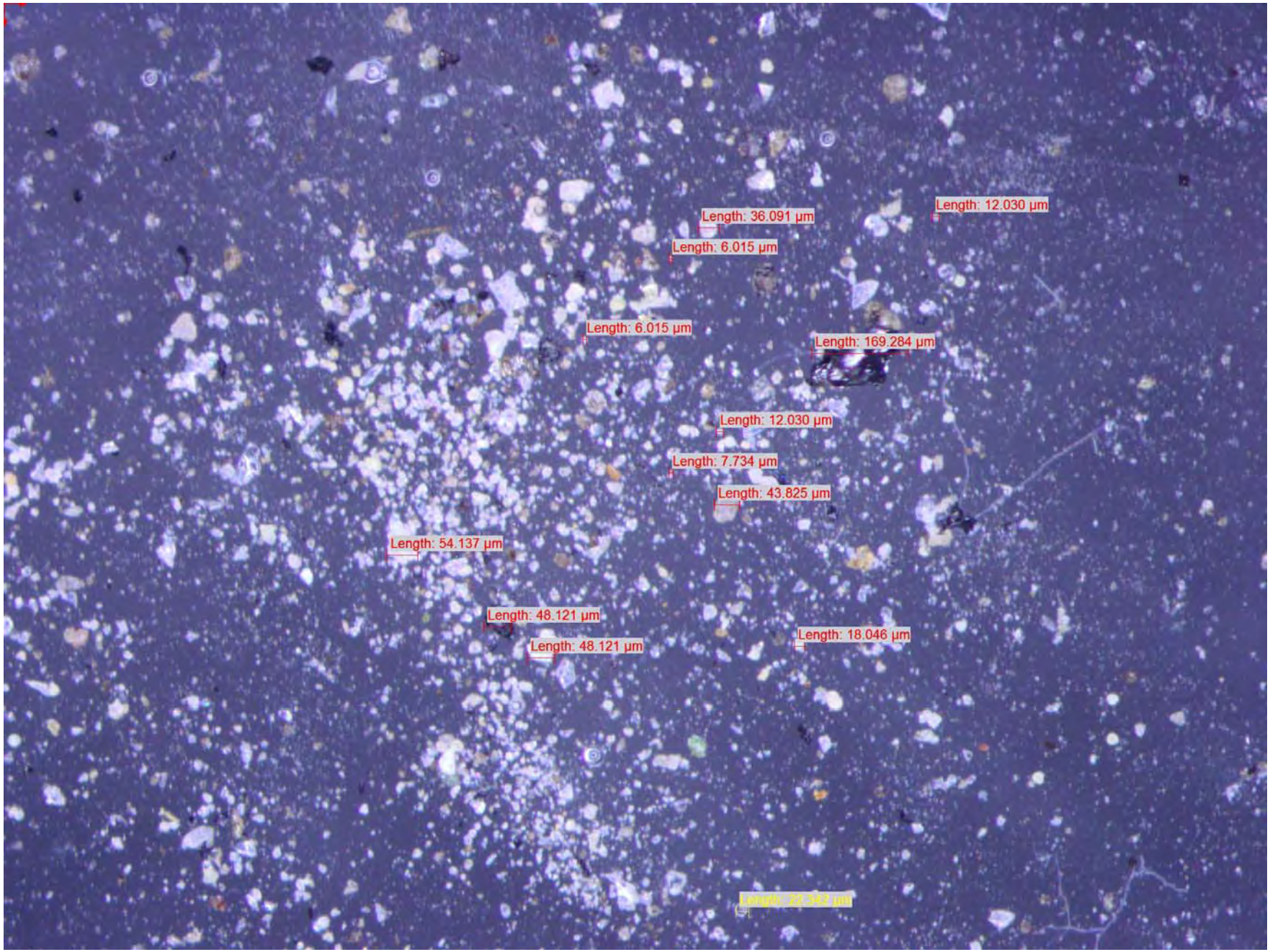
Sample #4 – 27 Favor St - 100X SEM SEI Microscope Image



Sample #4 – 27 Favor St - 430X SEM SEI Microscope Image



Sample #4 (Cont.) – 27 Favor St - 63X Stereo Microscope Image



Particle Size Discussion / Estimation

Particles above 10 microns in size are relatively easy to morphologically compare to the source materials from Hillcrest Industries. A significant portion of the samples collected revealed glass particles in excess of 277 microns and glass spheres in excess of 54 microns. Particles collected in this size range would not travel very far and would indicate a very close source. Particles between 2.5 and 10 microns are much more difficult to compare, especially when they are reaching the 2.5 size range. Particles <2.5 microns are most difficult to identify without the aid of elemental composition. Our ability to analyze these particles elementally is currently not available, therefore no estimate of particle percentage can be provided in this size range. Although it is clear from the images above that there are many particles in the 2.5 micron size range in these samples, it is not possible to positively attribute these particles to Hillcrest. It is important to note that in any environmental sample there are many particles in the 2.5 to 10 micron range. Mobile source, wood smoke, earthy minerals, and mold spores would all be examples of this.

Just as in the previous round of samples, I estimate the percentage of particles that fall in the 2.5 - 10 micron range (that I would attribute to Hillcrest industries) to be about the same as before. The percentages are an estimate.

92 Georges St ..... 1% - 5%
20 Jackson St ..... 2% - 6%
9 S. Pearl St ..... 1% - 3%
27 Favor St ..... 4% - 7%

Conclusions:

The sampled residential area is impacted by a variety of dust / particulate quite common to residential areas. Many more biologicals (ragweed pollen) and earthy minerals were noted in this latest round of sampling. But unlike most residential samples, the residential samples in the Attica neighbourhood, all have impact from the Hillcrest Industry source. Fractured glass, glassy spheres and in a lesser amount, slag was noted. The morphology of the particulate collected on the residential homes was found to be consistent with the material collected at the facility. Particles linked to the facility were measured and identified. Approximately 1%-7% of the crushed glass in the residential samples was found to be in the 2.5 -10 micron range. Considerably more crushed glass and glassy spheres were larger than 10 microns, some glass particles measured in access of 277 microns. Particles collected in this size range would suggest an extremely close source.

Of the 4 residential samples, all had impact from one or more sources at Hillcrest. In addition to the glass spheres, fractured glass, and slag; black sooty particulate was noted. These soot particles were very large and would also suggest a close source.