*Supplemental Information*

**Rapid Analysis of the Size Distribution of Metal-Containing Aerosol**

Jae Hong Park1, Imali A. Mudunkotuwa2, Kathryn J. Crawford3, T. Renée Anthony3,   
Vicki H. Grassian4, and Thomas M. Peters3,\*

1School of Health Sciences, Purdue University, Indiana

2Department of Chemistry, University of Iowa, Iowa

3Department of Occupational and Environmental Health, University of Iowa, Iowa

4Departments of Chemistry and Biochemistry and Nanoengineering, University of California San Diego, California

*Process for coating silicone oil on polycarbonate substrates*

Polycarbonate substrates were coated with silicone oil to prevent particle bounce. The oil was applied using a foam stamp (diameter of 20 mm) as shown in Fig. S1. Silicone oil from spray was collected on the Petri-dish and then foam stamp was dip in the oil. Polycarbonate substrates were placed on the non-stick paper and aluminum foil. After stamping oil, polycarbonate substrates were placed in an oven to evaporate volatile components in the oil.



FIG. S1. Process for coating silicone oil on polycarbonate substrates.

*3D-printed support*

A 3D-printed support was made of Acrylonitrile butadiene styrene (ABS) plastic. The support designed to maintain the distance of 500 µm between substrate and FP-XRF. As shown in Fig. S2, support has four pins to fix on the FP-XRF stand that has four holes.



FIG. S2. (a) Design with dimension (b) picture of support (3) install process: wipe the surface of FP-XRF stand → install support → put substrate holder on support.