A179 World Trade Center Dust Ground Zero and Beyond

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The goal of this demonstration is to demonstrate the powerful nature of PLM as an analytical instrument in the solving of complex forensic and environmental analytical problems.

This presentation will impact the forensic community by emphasizing the importance of the continued use of polarized light microscopy in the forensic science laboratory.

On the morning of September 11, 2001, in New York City, the World Trade Center (WTC) financial complex was reduced to a fine powdery dust by two commercial passenger airplanes, flow by terrorists. Since this was a unique, cataclysmic event, an analytical method to quickly and accurately study the dust specimens had to be developed. Initial studies revealed that the dust generated by the collapse of the buildings was composed of a myriad of materials. It appeared that all the materials composing the buildings, and all of the buildings' contents were literally pulverized by the collapse of the Twin Towers. The complex nature of this material dictated the necessity to develop a PLM method to study these WTC dust specimens. Aliquots of WTC dust specimens were taken at random from samples collected at Ground Zero and around the surrounding area and analyzed as follows: (1) each bulk specimen was thoroughly loosened and mixed gently using an agate mortar and pestle,
(2) each bulk sample was equally divided into eight aliquots, (3) each aliquot was divided into eight equal portions, (4) each portion was placed on a microscope slide (MS), covered with a No. 1½, 22mm, round cover-glass, and dispersed evenly in Melt Mount® 1.539, and (5) each specimen was labeled for identification. Next, a quantitative particle count of each specimen was carried out with a PLM fitted was a Chaulkly, point-count reticle. At least 1,000 particles were counted for all of the microscope slide preparation made from each bulk specimen. The results were recorded on a WTC dust data sheets. This data was used to compute the percent of each material present in the average specimen. The findings of this study are presented in this paper.

WTC Dust, PLM, Ground Zero

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