

**Reflected light microscopic pilot study of Central Park Lake (NYC) particulate carbonaceous combustion products: test of technique for discriminating sources of aerosol black carbon relevant to climate and pollution research**

Lead PI: **MaryAnn Love Malinconico** ([Love@ldeo.columbia.edu](mailto:Love@ldeo.columbia.edu))

Dept. of Earth and Environmental Sciences, Columbia University, and  
Lamont- Doherty Earth Observatory, Palisades, NY 10964

Co-investigator: Steven Chillrud, LDEO ([chilli@ldeo.columbia.edu](mailto:chilli@ldeo.columbia.edu))

**ABSTRACT:** Reflected light oil immersion microscopy will be used to identify opaque organic matter residue in cores from Central Park Lake, New York City, and document changing sources in anthropogenic atmospheric black carbon aerosols in the last 130 years. This technique, common in industrial coal utilization research, is only in the past decade been applied to environmental studies. The cores are also a unique opportunity to petrographically describe black carbon from refuse incineration fly-ash, previously not reported in the organic petrologic literature. As a significant component of atmospheric aerosols, particularly in aerosol haze layers over areas of heavy industry and significant biomass burning, black carbon affects regional climate by both absorbing incoming and outgoing solar radiation and by suppressing coalescence of raindrops and, consequently, precipitation. Therefore, successful test of using reflected light microscopy to identify historical opaque anthropogenic carbon sources on the local scale may indicate useful application in cataloging sources of climatically significant black carbon species.