



Application Note: Model OT21 Optical Transmissometer

Black Carbon Particulate Matter has recently been recognized as a major contributor to climate change, and is now considered the second leading cause of global warming behind Carbon Dioxide. Legislation is currently moving through US Congress requiring a comprehensive study of Black Carbon PM ambient air concentrations, and a full emissions inventory. Recently, an Information Collection Request (ICR) draft was distributed by the US EPA, asking certain coal- and oil-fired electric utility facilities to provide BC emissions data using the Magee Scientific Model OT21 Optical Transmissometer.

Black Carbon is a primary aerosol and component of fine particulate matter, created through the combustion of all fossil fuels. BC emissions are a direct function of combustion quality, and therefore emissions cannot be predicted through fuel-use models. In addition to their negative impact on climate, BC particles have long been considered hazardous to human health due to their submicron size and active surface area; BC exposure is known to cause detrimental health effects, including lung disease, premature hospitalization and death.



Magee Scientific Model OT21 Optical Transmissometer.



Filter slide tray and adapters for 25, 37, and 47-mm diameter samples.

The Magee Scientific SootScan™ **Model OT21 Optical Transmissometer** bench top analyzer has been developed as a simple and robust way of assessing Black Carbon PM from a variety of sample filters. The analysis can be easily performed in the field, and requires less than thirty seconds to provide BC mass concentration results. The instrument requires no support gases or consumables. A neutral density photometric standard filter kit is available for validating the instrument response and calibration.

The instrument is designed to directly accept 25, 37, or 47mm diameter filters comprised of Teflon, quartz fiber, glass fiber, or Teflon-coated glass fiber media. Alternative filter diameters can also be assessed by analyzing a "punch" of a larger sample (i.e. 8 x 10" high volume filter or 70mm or larger source sample filter).

The Model OT21 is designed to analyze filters for Black Carbon content which are collected from both ambient and source applications; including those specifically collected for US EPA PM-2.5 Federal Reference Method (FRM), Method 5 / 201A stationary source, and mobile source compliance sampling. And because Black Carbon PM is non-volatile, sample analysis can be performed on archived filters as well as freshly collected ones.

For further information, or if you would like to set up a demonstration, please feel free to contact us through our web site submittal form (www.mageescientific.com) or directly by phone (+1 510 845 2803) or email.