

Estimation *in situ* of extinction coefficient of particles using Cavity Ring-Down Spectrometer

Walter M. Nakema

Center for Lasers and Applications, IPEN/CNEN, Av. Prof. Lineu Prestes, 2242 - São Paulo, 05508-000, S.P. Brazil

walternak@gmail.com

Zuoqiang Hao¹, Fábio J. S. Lopes², Eduardo Landulfo²

¹*School of Science, Changchun University of Science and Technology, Changchun 130022, China*

²*Center for Lasers and Applications, IPEN/CNEN, Av. Prof. Lineu Prestes, 2242 - São Paulo, 05508-000, S.P. Brazil*

Abstract: Lidar measurements present limitation regarding to the determination of extinction coefficient on the surface (where most aerosol particles are concentrated) due to geometrical issues and overlap functions. An attempt to overcome these feature, it is purposed an approach using a Cavity Ring-Down Spectrometer (CRDS) for monitoring *in situ* the optical properties of aerosols in a continuous visible-range between 630 and 650 nm. The CRDS is a very sensitive and calibration-free direct absorption spectroscopic technique that provides absolute values of optical extinction by samples that scatter and absorb light. Simultaneous measurements of scattering and extinction coefficients were performed by an elastic lidar in order to compare the respective magnitude of values.

Keywords: Cavity Ring-Down Spectroscopy; Extinction Coefficient, Mie Theory

IXWLMLA Topic: Synergy between lidar and others instruments