



“Gheorghe Asachi” Technical University of Iasi, Romania



STUDY ON THE RELATIONSHIP OF VISIBILITY AND AEROSOL CHARACTERISTICS IN TAIPEI

Chih-Ming Ma^{1*}, Gui-Bing Hong¹, Chang-Tang Chang²

¹*St.Mary's Junior College of Medicine, Department of Cosmetic Application and Management,
Nursing and Management, I-Lan, Taiwan*

²*National I-Lan University, Department of Environmental Engineering, I-Lan, Taiwan*

Abstract

In an urban environment, visibility strongly reflects human safety and welfare. Generally, visibility is dependent on particle scattering and absorption. The former is influenced by light wavelength, atmospheric gaseous species and particle characteristics, especially number and size distribution. Therefore, it is necessary to establish the relationship between visibility and particle characteristics. Furthermore, it is important to understand the formation mechanism of secondary aerosols. In this study, a micro-orifice uniform deposit impactor (MOUDI) was used to measure the particle size distribution. At the same time, the particle scattering coefficient was measured with a nephelometer. After sampling, the chemical compositions of the particulates were analyzed via ion chromatography (IC) and a total organic carbon (TOC) analyzer. The results show that coarse particulates are not related to the scattering coefficient, whereas the scattering coefficient is slightly relative to the fine particle mass concentration. From the measured scattering coefficient, the visibility was calculated to be in the range of 20,000 to 120,000 m. The predicted visibility is greater than the observed data, ranging from 18,000 to 100,000 m at the Song-Sun Airport.

Key words: aerosol, scattering coefficient, visibility, Taipei

Received: August 2010; Revised final: March, 2012; Accepted: April, 2012
