



DIURNAL VARIATION OF PARTICULATE MATTER IN THE PROXIMITY OF ROVINARI FOSSIL-FUEL POWER PLANT

**Cătălin Nişulescu^{1*}, Delia Călinoiu¹, Adrian Timofte²,
Andreea Boscornea³, Camelia Talianu⁴**

¹University "Politehnica" from Timisoara, Department of Mechanical Machines Technology and Transportation,
1 Mihai Viteazu Blvd., Timisoara, 300222 Romania

²Al.I.Cuza University of Iasi, Faculty of Physics, 11 Carol I Blvd., 700506 Iasi, Romania

³University of Bucharest, Faculty of Physics, 409 Atomistilor Street, 077125 Măgurele, Ilfov, Romania

⁴National Institute of R&D for Optoelectronics, Laser Remote Sensing Department, 409 Atomistilor Street,
077125 Măgurele, Ilfov, Romania

Abstract

The main aim of this study was the measurement of particulate matter near a coal-based power plant, located in Rovinari (Romania). Two particle counters and an Aerodynamic Particle Sizer were used simultaneously to record the diurnal variation of particulates under different meteorological conditions. The results have shown that the concentration of particulates and their size distribution at the ground depends strongly on the direction and intensity of wind, and also it is influenced by the time of day. During the night period, the concentration level of particles is found to be very high. This is the connection with the diurnal fluctuation of the Planetary Boundary Layer height.

Depending upon the source and makeup of the coal being burned, the components of fly ash vary considerably, but the particles are generally spherical in shape and range in size from 0.5 µm to 100 µm. Fine particles are, therefore, transported at distance from the source, affecting the quality of local air.

Key words: air pollution, flying ash, particulate matter, size distribution

Received: November, 2010; *Revised final:* January, 2011; *Accepted:* January, 2011

* Author to whom all correspondence should be addressed: e-mail: cata_nisulescu@yahoo.com