

CONCENTRATION LEVEL AND SURFACE CHEMICAL COMPOSITION OF URBAN  
AIRBORNE PARTICLES NEAR CROSSROADS IN ZABRZE, POLAND

WIOLETTA ROGULA<sup>1</sup>, JÓZEF S. PASTUSZKA<sup>2</sup>, EWA TALIK<sup>3</sup>

<sup>1</sup>Institute of Environmental Engineering of the Polish Academy of Science  
ul. M. Skłodowskiej-Curie 34, 41-819 Zabrze, Poland

<sup>2</sup>Silesian University of Technology, Division of Energy and Environmental Engineering,  
Department of Air Protection  
ul. Akademicka 2, 44-100 Gliwice, Poland

<sup>3</sup>Silesian University of Technology, August Chełkowski Institute of Physics  
ul. Uniwersytecka 4, 40-007 Katowice, Poland

The paper presents results of investigations carried out in 2005 at six crossroads in Zabrze. The investigations comprised determinations of vehicular traffic intensity, observations of meteorological conditions and, as a main subject, determinations of concentrations of PM<sub>2.5</sub> and PM<sub>10</sub> at all observed sites. Structure of ambient aerosol in the vicinity of crossroads was compared with the structure of aerosol at a reference measuring point, located beyond effects of vehicular traffic, by determining a share of PM<sub>2.5</sub> in PM<sub>10</sub> for each site. At a selected crossroad the measurements lasted 11 days and the sampled dust was analyzed for chemical composition of surface of its particles with the use of the X-ray photoelectron spectroscopy (XPS). Both the most abundant and trace elements in the surface layer of dust sampled at the crossroads were identified.