

# CONCENTRATION MEASUREMENTS AND CHEMICAL COMPOSITION OF PM10-2.5 AND PM2.5 IN BEIRUT, LEBANON

N.A. Saliba, H. Shaka'a, H. Kouyoumdjian

*Chemistry, American University of Beirut, Beirut, Lebanon*

Particulate matter (PM10-2.5 and PM2.5) arise in the air either as direct emission from natural and anthropogenic sources, or as a result of interactions of pollutants in the atmosphere. While PMs have been associated with respiratory diseases and lung function problems, the relationship between exposure to PM, chemical composition and adverse health effects remains under close scrutiny. Hence, this study reports a 24-hour annual arithmetic mean of PM concentration in Beirut, Lebanon, and investigates the corresponding chemical composition using transmission Attenuated Total Reflection-Fourier Transform Infrared (ATR-FTIR) spectroscopy, ion chromatography (IC) and atomic absorption spectroscopy (AA). Such study in Lebanon is unique because aerosol composition shows specific components characteristic of the region from which the particles originated. It is also one of the few works that have reported emission and chemical composition measurements in the Middle East, complementing thereby the large amount of data available in the Western Mediterranean. More importantly, this study establishes a comparison between the main inorganic and organic species between PM2.5 and PM10-2.5 using ATR-infrared spectroscopy.