Source apportionment of fine and coarse atmospheric particles (examples from Tel-Aviv, Brindisi, and Florida)

Yaacov Mamane,
Professor
Faculty of Civil and Environmental Engineering
Technion - Israel Institute of Technology

Atmospheric fine particles and coarse particles were collected simultaneously at few urban and background sites in Israel, Italy and Florida, over two to three weeks in different seasons. Samples were analyzed for ions; EC and OC; and trace metals (XRF); few samples were also analyzed by microscopy.

Principal component analyses resolved five or more sources for the fine and coarse particles. Natural sources contributed significantly to the coarse particles, and anthropogenic sources dominated the fine particles. In Israel both fractions were dominated by crustal elements along with high sea salt (chlorine) levels, and silicates enriched with sulfur, due to transport from the Mediterranean Sea.

Significant seasonal changes of the sources were observed due to variations in meteorological conditions and atmospheric chemistry. In summer the prevailing north westerly winds were responsible for the transport of fine sulfates from neighboring east Europe. Examples from Italy, USA using additional back trajectory information, will be presented, including the use of electron microscopy in receptor modeling.

September 3, 2014, 3 - 4 pm
Wallberg Building, 200 College Street, Room 130