

Opening Ceremony and Plenary Sessions

Aerosol Conference China

Judith Chow

Junji Cao







THE SEVENTH ASIAN AEROSOL CONFERENCE
XI'AN, CHINA



第七屆亞洲懸浮微粒研討會
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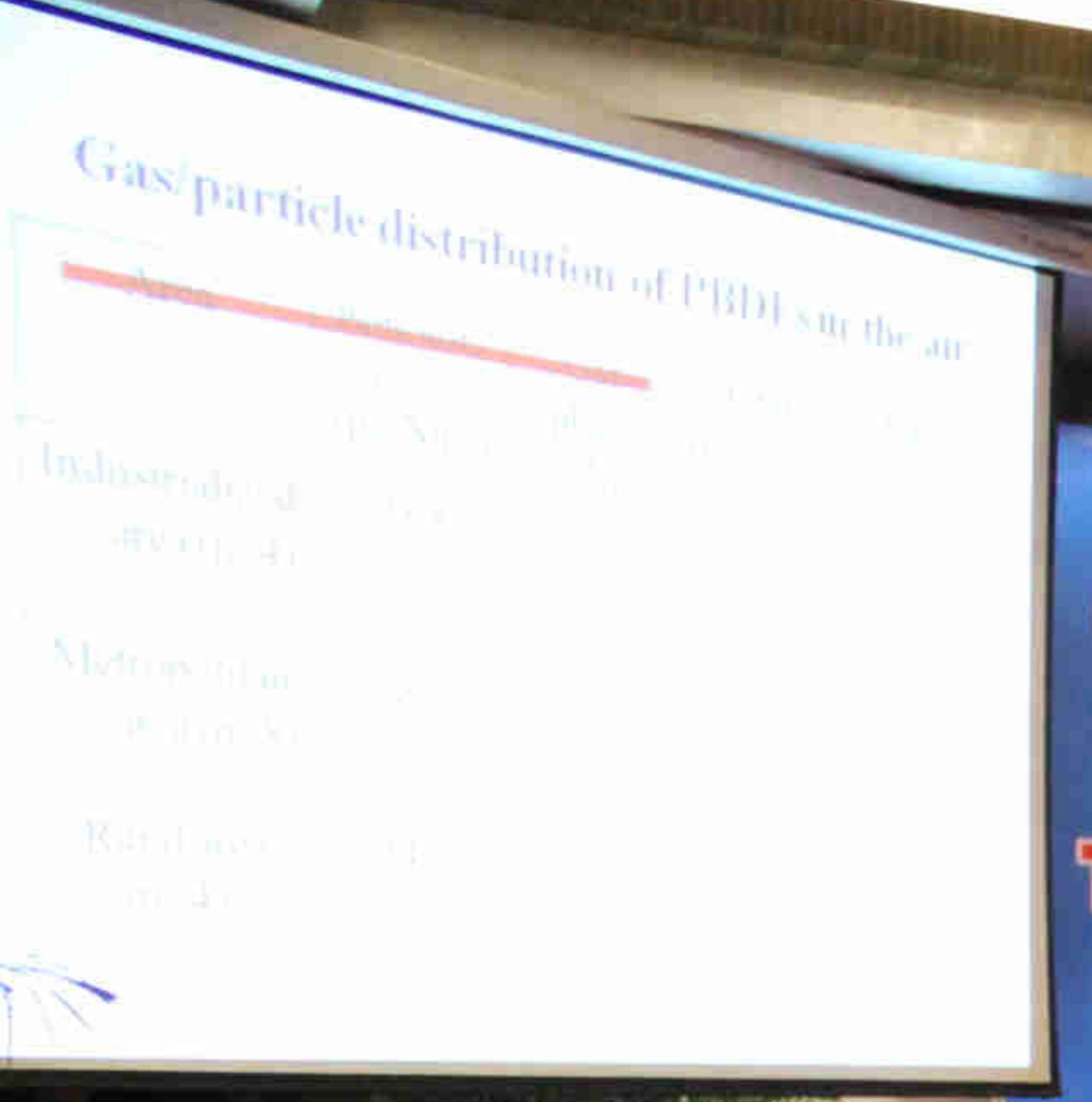
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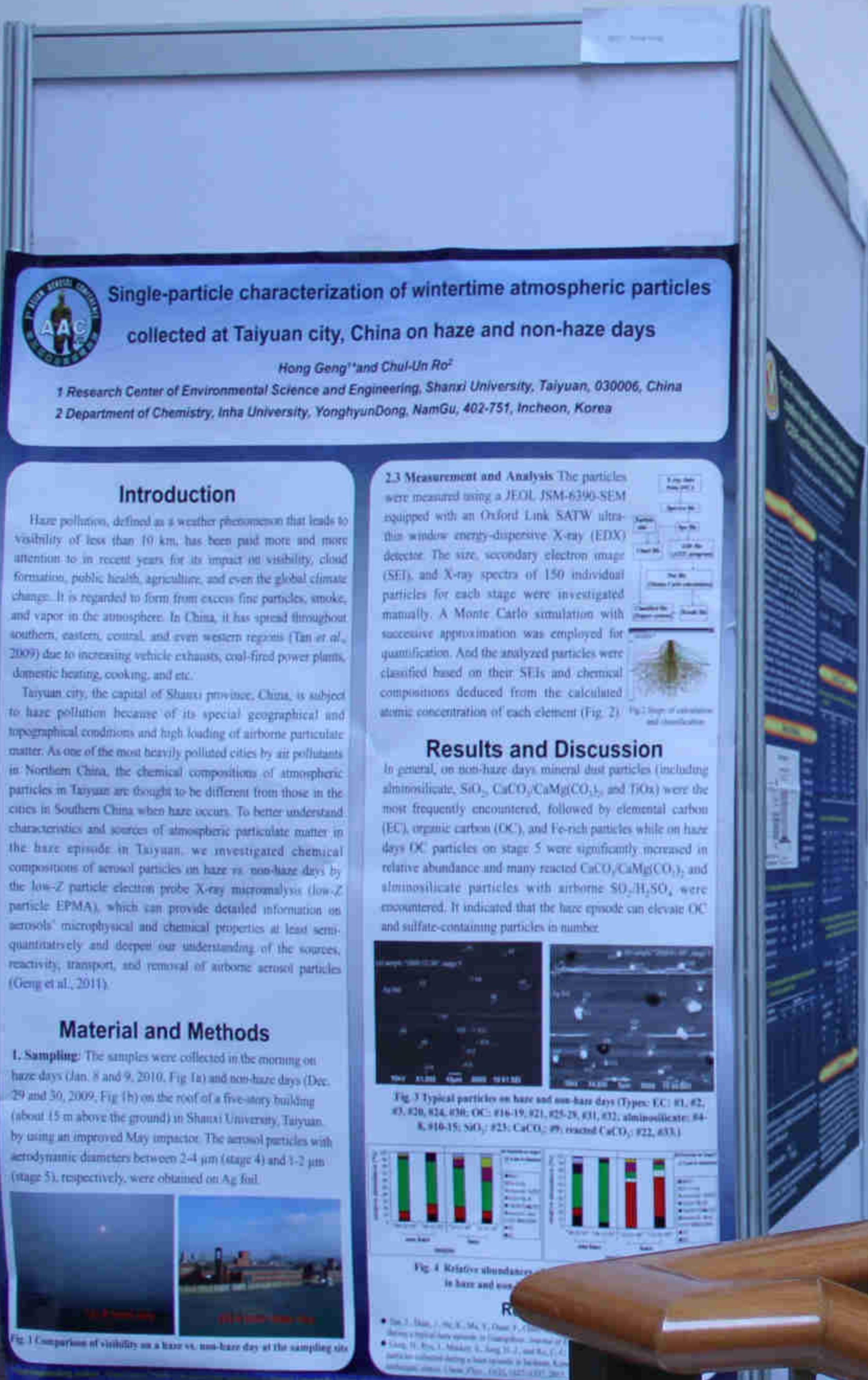
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Poster Sessions





Single-particle characterization of wintertime atmospheric particles collected at Taiyuan city, China on haze and non-haze days

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Introduction

Haze pollution, defined as a weather phenomenon that leads to visibility of less than 10 km, has been paid more and more attention to in recent years for its impact on visibility, cloud formation, public health, agriculture, and even the global climate change. It is regarded to form from excess fine particles, smoke and vapor in the atmosphere. In China, it has spread throughout southern, central, and even western regions (Tan et al., 2010). Major sources include vehicle exhausts, coal-fired power plants, and industrial emissions.

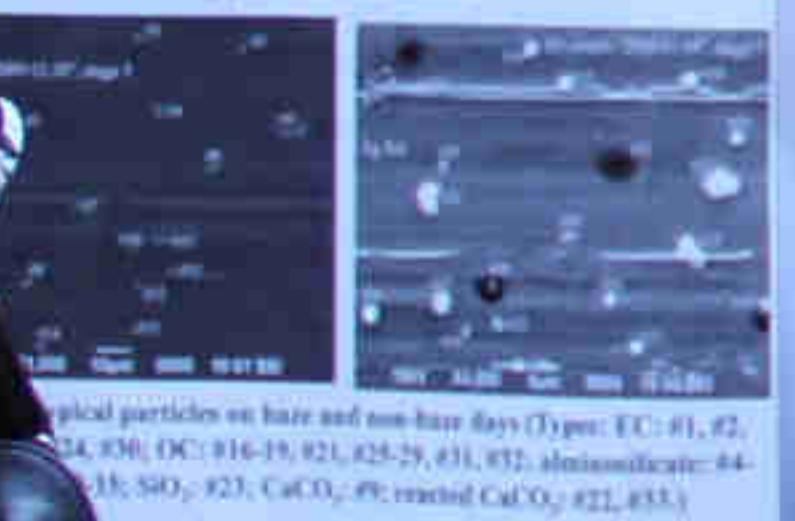
Taiyuan city, the capital of Shanxi province, China, is subject to haze pollution due to its special geographical and industrial conditions. The amount of airborne particulate matter in Taiyuan is higher than that in most cities by air pollutants (Wang et al., 2010). The concentrations of atmospheric particulate matter in Taiyuan are higher than those in the surrounding areas (Wang et al., 2010).

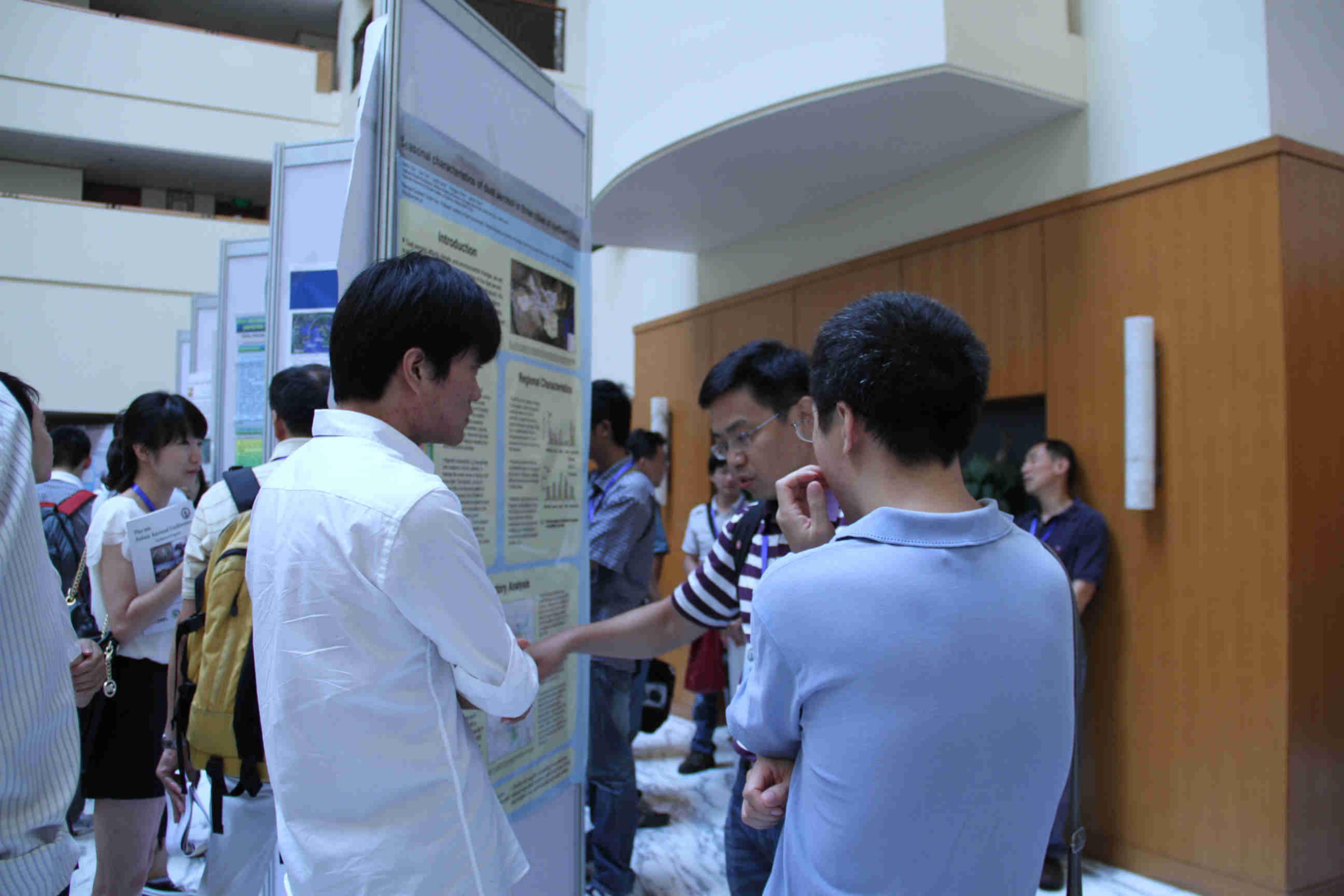
To better understand the characteristics of particulate matter in Taiyuan, we conducted chemical composition analysis of atmospheric particles on haze days by using scanning electron microscopy (SEM) and energy-dispersive X-ray spectroscopy (EDS).

2.3 Measurement and Analysis The particles were measured using a JEOL JSM-6390-SEM equipped with an Oxford Link-SATW ultra-thin window energy-dispersive X-ray (EDX) detector. The size, secondary electron image (SEI), and X-ray spectra of 150 individual particles for each stage were investigated manually. A Monte Carlo simulation with successive approximation was employed for quantification. And the analyzed particles were classified based on their SEIs and chemical compositions deduced from the calculated atomic concentration of each element (Fig. 2).

Results and Discussion

In general, on non-haze days, mineral dust particles (including aluminosilicate, SiO_2 , $\text{CaCO}_3/\text{CaMg}(\text{CO}_3)_2$, and TiO_2) were the most frequently encountered, followed by elemental carbon (EC), organic carbon (OC), and Fe-rich particles while on haze days OC particles on stage 5 were significantly increased in relative abundance and many reacted $\text{CaCO}_3/\text{CaMg}(\text{CO}_3)_2$ and aluminosilicate particles with airborne $\text{SO}_2/\text{H}_2\text{SO}_4$ were encountered. It indicated that the haze episode can elevate OC and sulfate-containing particles in number.







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A12

A8

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Closing Ceremony and Awards Banquet and Show





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Cai-Hua Li, Wei-Zhang

Guang-Zhong Wang

Yan-Qing Wang

Jian-Qiang Wang

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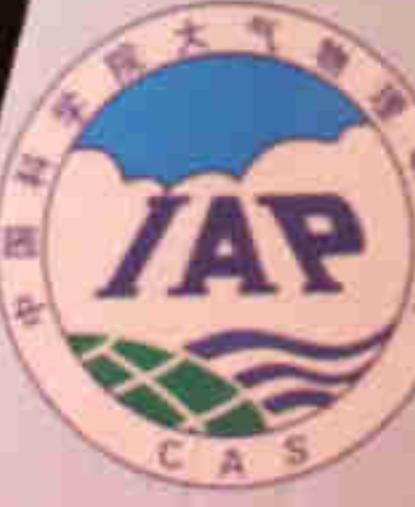


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