**Session Proposal**

# Session Title

Magnetic enhancement of the soils in urban/industrial areas: Sources and properties of anthropogenic magnetic particles and its influences on soil genesis

# Session Organizers

Branch of Soil Genesis and Classification and Soil Geography, Soil Science Society of China

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# Session Description

Magnetism is one of the important physical properties of soil. The magnetic minerals in natural soil are mostly inherited from parent rock, or produced in the processes of pedogenic weathering. Industrial high-temperature combustion and traffic, however, often release a huge amount of Fe-containing magnetic particles. The magnetic particles emitted from motor vehicles mostly originate from the friction of brake pads and tires, which have been the main sources of PM10 in the urban atmosphere. The continuous deposition of atmospheric magnetic dust on the ground has posed a profound impact on the soil, which can be regarded as a kind of anthropogenic pedogenesis. Moreover, the enhancement of soil magnetism is associated with the accumulation of pollutants in soil, because the anthropogenic magnetic particles are usually combined with harmful heavy metal elements. Magnetic measurements are thus applied in monitoring soil pollution.

This session is an interdisciplinary workshop concerning soil magnetism, soil genesis, soil environment and atmospheric science. It mainly discusses the sources of magnetic substance in soil, distinguishing between natural magnetic particles and anthropogenic ones correctly; the application of soil magnetic signal as a paleoclimatic proxy; the creation of micromorphological fingerprints of anthropogenic magnetic particles in soil for source tracking; the effects of deposition of atmospheric magnetic dust on soil genesis and properties; magnetic measurement of soil pollutants; the potential use of soil magnetism in the study of soil genesis and classification.

Through international profound exchanges in this session, we hope to create new diagnostic characteristics of soil based on magnetic parameters, and to strengthen the application of soil magnetism in the study of soil environment and soil genesis and classification.

# Format

Oral presentations

# Proposed Speakers

Dr. Tadeusz Magiera

Institute of Environmental Engineering, Polish Academy of Sciences, Zabrze, Poland. E-mail: [tadeusz.magiera@ipis.zabrze.pl](mailto:tadeusz.magiera@ipis.zabrze.pl)

He is a leading expert in the formation of technogenic magnetic particles and magnetically monitoring on soil pollution.

Prof. Dr. Weiguo Zhang

State Key laboratory of Estuarine and Coastal Research, East China Normal University, Shanghai 200241, China.

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Magnetic properties of paleosols in loess buried in the coastal plain of the Yangtze River catchment, Southeast China

Prof. Dr. Shinichi Yonemochi

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Characteristics of atmospheric magnetic particles emitted from automobile and railway

Prof. Dr. Pingguo Yang, Shanxi Normal University.

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Distribution of human settlement and climatic variability on the Fen River Basin in Holocene: Indication by magnetic monitoring