**Session Proposal**

# **Session Title**

Soil Composites: Synthesis, Interface Behavior and Environmental Remediation Applications

# **Session Organizers**

Yasin Orooji, Distinguished Professor, College of Geography and Environmental Sciences, Zhejiang Normal University, orooji@zjnu.edu.cn (primary contact person)

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# **Session Description**

This session focuses on the design, synthesis, and functionalization of soil composites, including mineral-based nanocomposites, porous carbon composites, and biochar-based hybrids. It will discuss their interface interactions with soil components (e.g., heavy metals, organic pollutants), applications in soil remediation (e.g., pollutant adsorption, carbon sequestration), and performance optimization for sustainable agriculture. Experts will share insights into bridging lab-scale composites to field-scale soil improvement.

# **Relevance**

# Aligning with soil science’s core challenges of soil degradation and carbon neutrality, this session addresses how advanced composites enhance soil fertility, mitigate contamination, and promote eco-friendly soil management, supporting the congress’s theme of "Innovative Soil Technologies for a Sustainable Future."

# **Format**

Oral presentations (15-20 mins each) + panel discussions…

1. **Proposed Speakers**

# Hamid Ali, Researcher in Advanced Materials, specializing in morphological modifications of porous organic polymers for environmental applications (contributions: innovative design of porous composites for soil pollutant removal)

# Zahra Taherian, Expert in sustainable catalysts, focusing on metal-doped composites for soil heavy metal immobilization (contributions: development of yttria-promoted nickel composites for soil remediation)

# Ehsan Ghasali, Specialist in high-entropy alloys and composites, researching their compatibility with soil matrices (contributions: synthesis of mullite-based composites for soil structure improvement)

# Wenlong Xu, Dot connector of two communities by background in nanomaterials and working at JAAS wlxu@jaas.ac.cn

# Hassan Karimi-Maleh, Leading scholar in nanobiomaterials, focusing on biochar composites for soil nutrient retention (contributions: nanocomposite adsorbents for soil organic pollutant removal)