

## **Analytical methods as tools for new experimental approaches in soil science**

**Convener:** Tonu Tonutare **Co-conveners:** Luis Carlos Colocho Hurtarte, Manfred Sager, Viia Lepane, Milda Pucetaite (chairperson)

**Chat** Thu, 07 May, 16:15–18:00

### **Session details:**

Soils are formed through complex processes often resulting in a highly heterogeneous mixture of organic and mineral phases, whose analysis requires structural insight across several length scales. Therefore, the choice of analysis methods for investigation of soil chemical, biochemical and physical properties play very important role in the progress of soil science. New research approaches, such as “lab on phone” that has appeared in scientific literature during the last few years, and which specifies the use of smartphones as analytical instruments in labs and also for field experiments, could serve as easily available soil analysis method and as means to increase involvement of the society to the soil science research. On the other hand, the unceasing developments in advanced synchrotron based analytical techniques continue to break frontiers in how questions on soil biogeochemistry and structure can be addressed, particularly at micro- and nano-scales.

This session will explore the diverse possibilities offered by various analytical techniques: from advanced synchrotron based ones, to the “lab on phone”, ICP-MS, GC-MS, HPLC-MS, TGA-MS, FTIR, fluorescence and others, in the analysis of soils.

### **Session schedule:**

**16:15 – 16:18 – Welcome and introduction into the session**

D2277 |  
EGU2020-21548

**Discussion time 16:18 – 16:24**

**Effect of extraction temperature and time on the chemical and colloidal properties of dissolved organic matter**

Erika Andersson, Viktoriia Meklesh, Per Persson, Anders Tunlid, and Ulf Olsson

D2278 |  
EGU2020-15883

**Discussion time 16:24 – 16:30**

**Chemical composition and colloidal properties of dissolved organic matter in Norway spruce forest stands of different ages**

Viktoriia Meklesh, Luigi Gentile, Ulf Olsson, Anders Tunlid, and Per Persson

D2279 |  
EGU2020-20828

**Discussion time 16:30 – 16:36**

**Reconciling the multiple impacts of land use change on soil carbon, nitrogen, phosphorus and sulphur cycles**

Luis Carlos Colocho Hurtarte, Liming Wang, and Jörg Prietzel

D2280 |

EGU2020-11423

**Discussion time 16:36 – 16:42**

**Determination of compost maturity using near infrared spectroscopy (NIRS)**

**Highlight**

Ivoneta Diethart, Eva Erhart, Marion Bonell, Katrin Fuchs, Dieter Haas, and Wilfried Hartl

D2281 |

EGU2020-4733

**Discussion time 16:42 – 16:48**

**Nanoscale STXM imaging of soil fungal exudates and organo-mineral interfaces**

Milda Pucetaite, Per Persson, and Edith Hammer

D2282 |

EGU2020-17614

**Discussion time 16:48 – 16:54**

**STXM analysis of fungal soil aggregation**

Edith C. Hammer, Per Persson, and Milda Pucetaite

D2283 |

EGU2020-17087

**Discussion time 16:54 – 17:00**

**Soil and vegetation feedbacks on climate change in high mountain ranges of the Tibetan Plateau using near and mid-infrared spectroscopy (FT-NMIRS) in soil properties, phosphorus (P) as example**

Zuonan Cao, Peter Kühn, and Thomas Scholten

D2284 |

EGU2020-581

**Discussion time 17:00 – 17:06**

**The comparison of smartphone, Vis- and atomic emission spectrometers for soil P analysis by Mehlich 3 method**

Tõnis Tõnutare and Aldo Oras

D2285 |

EGU2020-20338

**Discussion time 17:06 – 17:12**

**Determination the influence of liming with oilshale ashes to the changes of water extractable plant nutrients in acidic soils**

Mihkel Ilves, Tiina Köster, Kadri Krebsstein, and Tõnu Tõnutare

D2286 |

EGU2020-20904

**Discussion time 17:12 – 17:18**

**Comparison of Mehlich 3, AL and artificial root exudates containing extractants for soil phosphorus analysis**

Tõnu Tonutare, Gert Kaldmae, Tiina Köster, Kadri Krebsstein, and Ako Rodima

D2287 |  
EGU2020-918

**Discussion time 17:18 – 17:24**

**Mapping cation exchange capacity using a quasi-3d joint-inversion of EM38 and EM31 data**  
Dongxue Zhao and John Triantafyllis

D2288 |  
EGU2020-9564

**Discussion time 17:24 – 17:30**

**Determination of trace elements and macronutrients in agricultural soils using energy dispersive X-ray fluorescence as a rapid and precise analytical technique**  
Maame Croffie, Paul N. Williams, Owen Fenton, Anna Fenelon, Konrad Metzger, and Karen Daly

D2289 |  
EGU2020-6452

**Discussion time 17:30 – 17:36**

**Soil morphometrics applied to soil trenches in a contaminated site**  
Fabio Terribile, Simona Vingiani, Antonio Miletì, and Giuliano Langella

D2290 |  
EGU2020-1117

**Discussion time 17:36 – 17:42**

**Correlations between magnetic enhancement and heavy metal pollution in the urban soils of an industrial area in Shanghai**

Mei Li

D2291 |  
EGU2020-5816

**Not presented**

**Determination of the silver concentration with ion-selective electrode potentiometry**  
Nataliia Chupakhina, Oleg Novikov, Pavel Maslennikov, and Galina Chupakhina

**17:42 – 17:57 – Open discussion**

**17:57 – 18:00 – Closure of the session**