

**AgroEnviro Workshop 2022 - Program**  
**Rhizosphere and Hyphosphere Processes Affecting Phosphorus,  
Carbon, and Nutrient Cycling**  
5-6 October, Brazilian Synchrotron Light Laboratory (LNLS-CNPEM)

**DAY 1 - WEDNESDAY, 5 OCTOBER**

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08:00 – 8:55 Check-in

**TUTORIAL ON THE RHIZOSPHERE AND HYPHOSPHERE**

**Moderator: Dean Hesterberg (LNLS/CNPEM)**

08:55 - 09:00 Welcome (Moderator)

09:00 - 09:15 **Hélio Tolentino** (Head, Division of Heterogeneous and Hierarchical Matter) -  
Update on Sirius

09:15 – 10:00 **Doris Vetterlein** (Helmholtz Center for Environmental Research - UFZ)  
Overview of the rhizosphere and knowledge gaps

10:00 – 10:15 DISCUSSION

10:15 – 10:40 BREAK

10:40 – 11:10 **Talita Ferreira** (LNLS-CNPEM) –Imaging soil components and biological  
structures at varying spatial scales using Zoom tomography

11:10 – 11:20 DISCUSSION

11:20 – 11:50 **Carla Polo** (LNLS-CNPEM) –Nanoscale imaging of soil and biological structures  
by coherent diffraction imaging (CDI)

11:50 – 12:00 DISCUSSION

12:00-12:05 Official Workshop Photo

12:05 – 13:45 **POSTERS and LUNCH** (Sirius reception area)

**Moderator: Talita Ferreira (LNLS-CNPEM)**

13:45 – 14:30 **Tiina Roose** (University of Southampton) Coupling imaging and modeling to  
understand rhizosphere biogeochemical processes

14:30 – 14:45 DISCUSSION

14:45 – 15:15 **Carlos Pérez** (LNLS-CNPEM) Chemical imaging of soil structures and processes  
by  $\mu$ -XRF,  $\mu$ -XFT, and STXM

15:15 – 15:25 DISCUSSION

15:25 – 15:45 BREAK

15:45 – 16:15 **Raul Freitas** (LNLS-CNPEM) Chemical imaging of fungi and other biological  
structures by FTIR microscopy and nanoscopy

16:15 – 16:25 DISCUSSION

16:25 – 16:55 **Renata Rabelo** (LNLS-CNPEM) – Techniques to maintain biological structure  
integrity during sample preparation for micro/nanoscale analyses

16:55 – 17:05 DISCUSSION

17:05 – 18:30 **TOUR OF THE SIRIUS SYNCHROTRON**

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## DAY 2 - THURSDAY, 6 OCTOBER

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### SYMPOSIUM ON RHIZOSPHERE AND HYPHOSPHERE PROCESSES

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**Moderator: Carlos Pérez (LNLS/CNPEM)**

09:00 - 09:45 **Doris Vetterlein** (Helmholtz Center for Environmental Research - UFZ).  
Multiscale, multimodal rhizosphere imaging and emergent properties

09:45 - 10:30 **Paulo Mazzafera** (University of Campinas - UNICAMP) How roots meet water

10:30 – 11:00 **Ricardo Martinez-Garcia** (ICTP South American Institute for Fundamental  
Research /IFT - UNESP) –A game-theoretical approach to understand soil  
resource acquisition by roots: from competition to facilitation

11:00 – 11:30 BREAK

11:30 – 12:00 **Lucas Mendes** (University of São Paulo USP-CENA) –The rhizosphere  
microbiome: how plant breeding shapes microbial traits for (a)biotic stresses

12:00 – 12:30 **Edith Hammer** (Lund University) Soil fungal-bacterial interactions and  
assessment using microchips (by videoconference)

12:30 – 13:00 **Sara Adrián L. Andrade** (University of Campinas-UNICAMP) Acquisition of  
soil P by arbuscular mycorrhizal fungi

13:00 – 14:30 **LUNCH** (CNPEM Cafeteria)

**Moderator: Sara Adrián L. Andrade (UNICAMP)**

14:30 - 15:15 **Tiina Roose** (University of Southampton) Imaged based modelling of plant-soil  
interactions

15:15 – 15:45 **Dean Hesterberg** (LNLS-CNPEM) – A rhizomicrocosm system for *in-vivo*  
imaging of chemical movement around an isolated root

**15:45 – 16:00 FINAL DISCUSSION**

**16:00 ADJOURN**

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