Developing Simulated Soil Platforms for Biological and Environmental Imaging
Classification Title: Postdoctoral Scholar
Duration: 2 years
Hiring Manager: Richardson, Jocelyn
Work Location: 100% onsite
Reason for opening: LDRD project

SLAC National Accelerator Laboratory invites applications for a 2-year post-doctoral scholar position in the Structural Molecular Biology (SMB) group at the Stanford Synchrotron Radiation Lightsource (SSRL), working with Dr. Jocelyn Richardson. In this position, you will work within a rich scientific environment at SLAC and Stanford University focusing on sample platform development to overcome limitations in sample preparation for rhizosphere research. The postdoctoral scholar will work on a laboratory directed research and development project to develop simulated soil platforms compatible with SSRL imaging capabilities using advanced 3D printing facilities in collaboration with Stanford University. The primary goal of the postdoc is to develop modular soil platforms (which simulate various aspects of soil) using advanced additive manufacturing, and to test the platforms for compatibility with synchrotron-based microXRF imaging. The development of such a platform, combined with SLAC's imaging tools, will enable multi-scale spatio-temporal phenomena important in areas of bioenergy and agricultural crops that contribute to a systems-level predictive understanding of biological processes.

Required Qualifications:
A Ph.D. in Chemistry, Engineering or Biological Science (or related fields) with a focus on advanced additive manufacturing, and/or microfluidic development is preferred. Ideally, the candidate should have analytical skills to integrate the manufactured devices with characterization tools.

Specific Responsibilities:
- Work collaboratively with experts at the Stanford Additive Manufacturing and Prototyping facility, to use their advanced 3D printing capabilities in developing a simulated soil platform.
- Develop methods for embedding minerals and/or solid fertilizer into the platform formfactor.
- Conduct plant growth experiments using the sample platform, evaluate roadblocks or problems in platform design, and make modifications to the design and fabrication to improve plant growth.
- Use synchrotron methods (primarily XRF) to determine beamline and sample boundary conditions and compatibility. Determine workflows (and compatibility) for various types of multimodal analyses beyond synchrotron XRF.

To be successful in this position you will bring:
- Expertise in using fabrication methods to solve complex sample delivery problems (such as 3D printing, lithography techniques etc.), ideally related to biological and/or environmental research.
- Demonstrated research experience as evidenced by a publication record.
- Willingness to learn any knowledge/experience gaps.

- Demonstrated effective written and verbal communications skills and ability to work/communicate effectively with a diverse biology research community.
- Demonstrated ability to work independently and in a multidisciplinary team environment.

Please send a letter with CV and list of publications to Jocelyn Richardson, email: jocelynr@slac.stanford.edu