

Abstract Submitted
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Scintillator-Layered Imaging Microscope for Environmental Research M.F. KIDD, S.R. ELLIOTT, Los Alamos National Laboratory, T.C. ONSTOTT, S. MYENI, B. STACKHOUSE, Princeton University, S.M. PFIFFNER, T. VISHNIVETSKAYA, A. LAYTON, University of Tennessee, L.G. WHYTE, N. MYKYTCZUK, J. ALLAN, R.C. WILHEM, McGill University, R. HETTICH, K. CHOUREY, T.J. PHELPS, Oak Ridge National Laboratory, P. HATCHER, Old Dominion University — We are developing a detection mechanism to observe fluorescent light from a fluorescently-tagged biological sample as well as the electron from the beta decay of ^{14}C within the same sample while maintaining the position information of the interaction. This system will be used to study the carbon uptake of microorganisms from permafrost soil samples, which will help understand the output of CO and CH_4 from thawing permafrost. Our system is called SLIMER, the Scintillator-Layered Imaging Microscope for Environmental Research. The microscope component of SLIMER is a fluorescence microscope already capable of detecting the fluorescent signal. We chose to use $\text{CsI}(\text{Tl})$, which, when vapor-deposited on a fiber-optic plate, grows with a microcolumnar structure. These columns channel the light produced within them, thus maintaining the position information of the beta decay. We will present our progress using this method of detection.

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