Title:	Development of Cellular Absorptive Tracers (CATs) for a Quantitative Characterization of the Complexity of Nanoscale Biological Systems
Type:	Postdoc
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Abstract:	The goal of this project is to develop a new method, entitled Cellular Absorptive Tracers (CATs; *PNNL Invention Disclosure*; Saripalli, P. 2001). CATs are useful for characterizing the extent, location, and morphology of cell mass in MEMS, by preferentially absorbing into the living or lysed cells or adsorbing at the cell surfaces. We will identify suitable CATs molecule(s), measure their affinity to various cellular phases and test them in larger scale flow experiments. The molecules chosen will be used to demonstrate their utility to quantitatively characterize the biomass, its location and morphology in MEMS. The results will yield first-of-their-kind datasets relating metabolic parameters to heterogeneity and morphology of cells. The data will be used to obtain quantitative information needed for the characterization of cellular phase masses, their location and morphology in MEMS, and to develop the theory relating the cellular phenomena of interest to cellular heterogeneity and morphology. The proposed research contributes a new set of tools for a rapid, noninvasive characterization of nanoscale biological systems.