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Characterization of Particulate Matter Transport across the Lung-Surfactant Barrier using Langmuir Monolayers[1] JEREMY EATON, MICHAEL DENNIN, University of California Irvine, ALEX LEVINE, University of California Los Angeles, STEVEN GEORGE, University of California Irvine —
We investigate the transport of particulate matter acros the lung using a monolayer of bovine lung surfactant tagged with NBD in conjunction with alveolar lung cells below the air-water interface. The monolaye dynamically compressed and expanded to induce phase transitions as well as buckling and folding. Polystyrene spheres ranging from 20 to 500 nm in diameter were tagged with fluorescent molecules and deposited on the monolayer. We will present results of preliminary studies of the transport of beads from the air-water surface to the lung cells through the monolayer. Characterization of the transfer will focus on differential fluorescence microscopy to distinguish uncoated beads from beads from beads coated with surfactant monolayers. The presence or absence of surfactant associated with the beads provides insight into potential transfer mechanisms and will serve as an input into models of the bead transfer.

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