

Abstract Submitted
for the OSF07 Meeting of
The American Physical Society

**Using spatial deconvolution to improve image contrast in
a capillary-based high-pressure chamber for fluorescence microscopy**

THOMAS HAVER, ERICA C. RABER, PAUL URAYAMA, Miami University —

A quartz capillary is used as a simple-to-construct high-pressure chamber for fluorescence microscopy imaging, with capillary walls acting as both the mechanical support and optical window. Because wall curvature introduces image aberrations, the effectiveness of spatial deconvolution as an image restoration technique is investigated. The point-spread-function is measured in both a capillary and a flat-slide control, then applied in the imaging of sub-cellular dimension microspheres. Results demonstrate that sub-cellular dimension objects can be spatially resolved in a capillary capable of pressurization to several hundred atmospheres, the range of interest when studying pressure effects in cellular systems. Contrast improvement is observed for both high- and low-numerical-aperture objectives.

Paul Urayama
Miami University

Date submitted: 27 Sep 2007

Electronic form version 1.4