

Abstract Submitted
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Digital holographic microscopy and atomic force microscope integrated with optical microscope NELSON CARDENAS, NINAD INGLE, LINGFENG YU, SAMARENDRA MOHANTY — We report integration of atomic force microscope (AFM) and digital holography microscope (DHM) onto an inverted optical microscope. This allowed mapping of the physical and optical properties of the sample in the nanometer scale without compromising optical (phase-contrast and fluorescence) imaging capabilities of the optical microscope. While AFM provided high resolution topographical information, quantitative phase properties of the sample are revealed by the DHM technique. DHM implements off-axis configuration to encode the phase and intensity profiles in a single record. This allows for high speed acquisition of the hologram which could be numerically analyzed to reveal the sample with an axial resolution at the nanometer scale as well as changes in refractive index. Nanonics AFM platform's transparent nature and bent configuration of fiber based cantilever yields very minute interference during the simultaneous DHM and AFM recordings. We will present the imaging capabilities of the integrated system for analysis of both living and non-living structures.

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