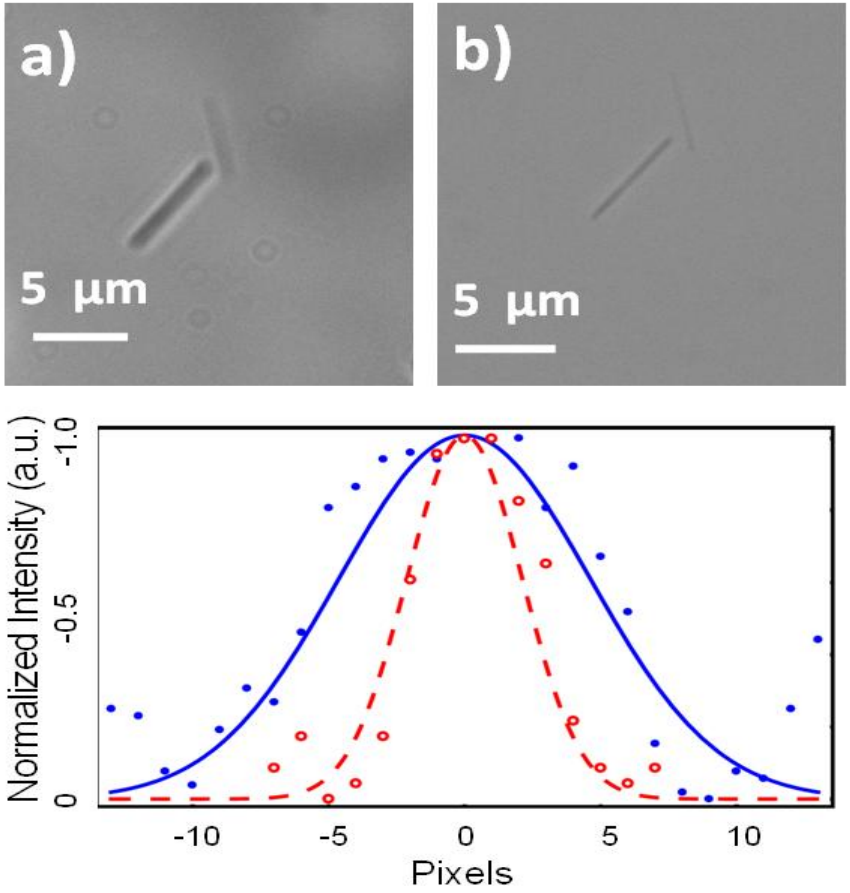
HEMISPHERICAL DIGITAL CONDENSERS

LJ Technologies, 1041 E 24 St, Hialeah, Fl 331013
Contact: Luis Molina (305) 898 7875

RESOLUTION IMPROVEMENT

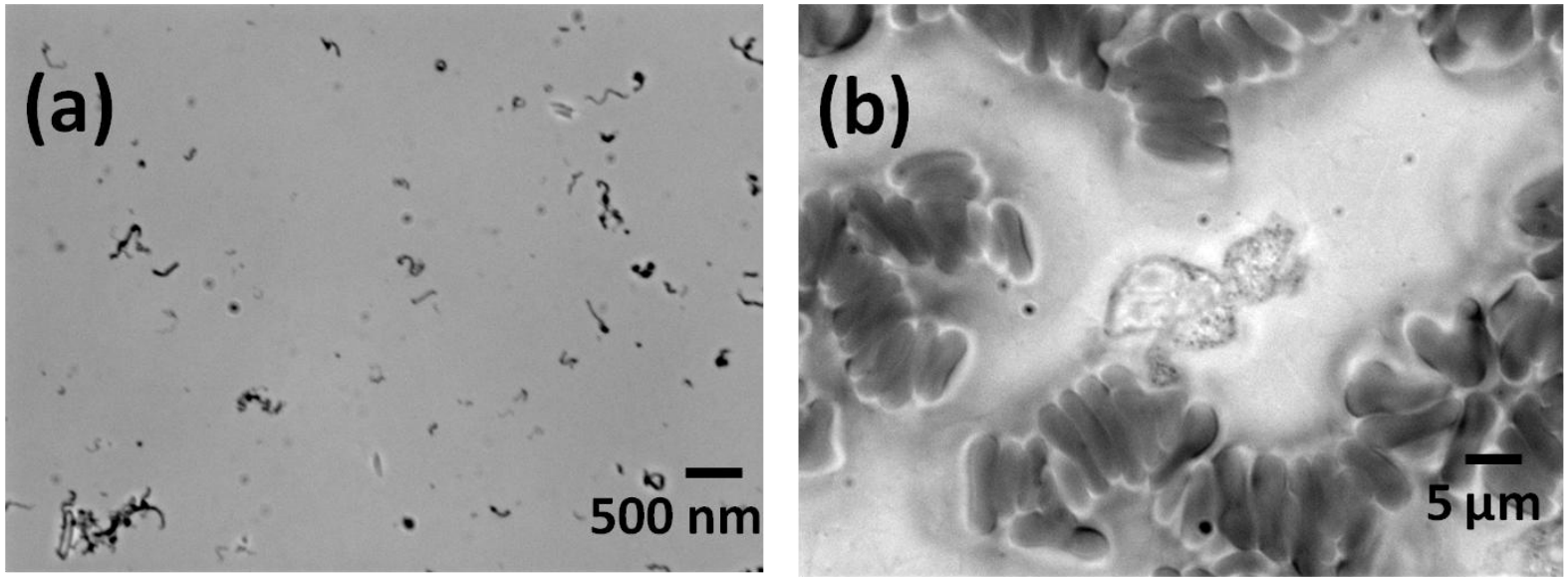
Hemispherical digital condenser consisting of an array of 560 white-light LEDs distributed uniformly in the internal surface of a rigid, hollow, hemisphere with a radius of 10 cm.



Images of Titanium Dioxide-B nano-wires with a diameter of ~ 100 nm using the (a) microscope's built in illumination source and (b) the hemispherical digital condenser. (c) A composition of transversal intensity profiles taken of the same nano-wire using both illumination sources. Source (a) in blue, source (b) in red.

MICROSCOPE ILLUMINATION WITH FLEXIBLE ELECTRONIC CONTROL

Microscope condensers with variable numerical aperture and no lenses, mirrors, or mechanically moving parts. Allow for simple implementation of numerous techniques like Fourier filtering and bright and dark field microscopy.



Images obtained using an optical microscope with an hemispherical digital condenser corresponding to a sample with (a) Carbon nano-tubes with a diameter of 30-60 nm and (b) human blood dropped on top of a glass cover slip. Single carbon nano-tubes are clearly observed in (a). Piled disk-shaped red cells and an amoeba-shaped white cell at the center of the image are observed in (b). A rich sub-cellular internal structure of the white cell is also clearly observed.

HEMISPHERICAL DIGITAL CONDENSERS

LJ Technologies, 1041 E 24 St, Hialeah, Fl 331013
Contact: Luis Molina (305) 898 7875

- Images with subwavelength resolution formed directly in the far-field, in the microscope camera, without the need of sample tagging, scanning, or numerical post-processing.
- Electronically controlled microscope condensers with variable numerical aperture and no lenses, mirrors, or mechanically moving parts. Allow for simple implementation of numerous techniques like Fourier filtering and bright and dark field microscopy.
- Visible, ultraviolet, and infrared illumination available.
- **Scientifically validated at Texas Tech University Nano Technology Center:**

L. Molina, D. Dominguez, T. O'Loughlin, A. A. Bernussi, and L. Grave de Peralta, "Digital optical condensers with no lenses, mirrors, or moving parts," *Optics Express* (under review, 2014).

D. Dominguez, L. Molina, D. B. Desai, A. A. Bernussi, and L. Grave de Peralta, "Optical microscope with maximum resolution using a hemispherical digital condenser," *Optics Communications* (under review, 2014).