Supporting Information:
High-Throughput, High-Resolution Interferometric Light Microscopy of Biological Nanoparticles

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Figure S1: **Experimental validation of caSPIR.** a Experimental (upper two rows) images of 100 nm PS bead and theoretically (lower two rows) calculated PSFs corresponds to circular sector mask’s angle of axis of the asymmetry. b Experimental caSPIR image of a single 100 nm PS bead and cross-section profile. c Simulated caSPIR image of a delta function and cross-section profile. d 100 nm PS bead cross-section profile captured under the asymmetric illumination. The image is normalized with the background signal, followed by background subtraction. The standard deviation of the background is $\sim 0.017$. 

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Figure S2: **Circular sector angle sweep.**

- **a** Circular sector illustration and **b** PSF corresponds to 60°.
- **c** Cross-section profiles along the dash line in (b) for circular sector angles from 30 to 180. (Colorbar and normalized intensity values are scaled with arbitrary unit)
Figure S3: **Regularization parameter sweep.** Different solutions are generated by sweeping the regularization parameter ($\alpha$) from $0.1 \times \alpha_0$ to $10 \times \alpha_0$, where $\alpha_0 = 0.01$ is the chosen parameter. (Top) Reconstructed caSPIR images of 250 nm separated nanobars. (Bottom) Cross-section profiles along the horizontal nanobars. The results demonstrate that the choice of the regularization parameter is not critical within the close range of the selected parameter.
Figure S4: L-curve for the Tikhonov regularization. The L-curve is calculated for caSPIR image using the 250 nm separated nanobars. The selected regularization parameter ($\alpha = 0.01$) is nearby the corner of the L-curve.
Figure S5: Fabrication non-uniformity in EBL sample. a caSPIR, b conventional SPIR, and c SEM images of nano-word *BU NANO*. Fabrication non-uniformity can be clearly seen at the corners of the nano-letters. (Scale bars are 1 µm)
Figure S6: **Conventional SPIR images of Ebola VLPs.** a-d Conventional SPIR images corresponds to caSPIR images in manuscript Fig. 4. Outsets in (c) are (Left) conventional and (Right) caSPIR images. Note that image scales are slightly different then Fig. 4 in manuscript. (Scale bars are 1 µm)