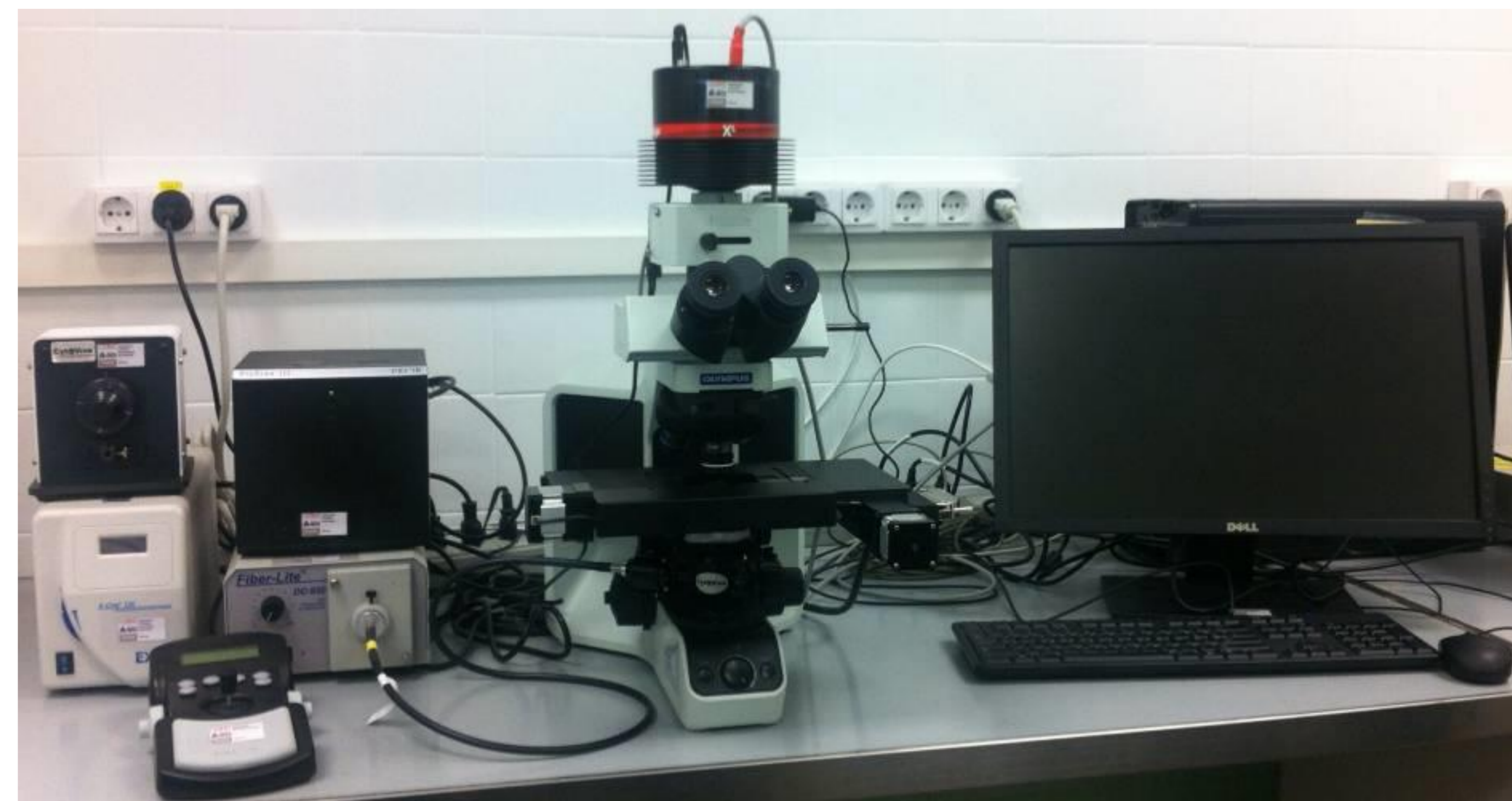


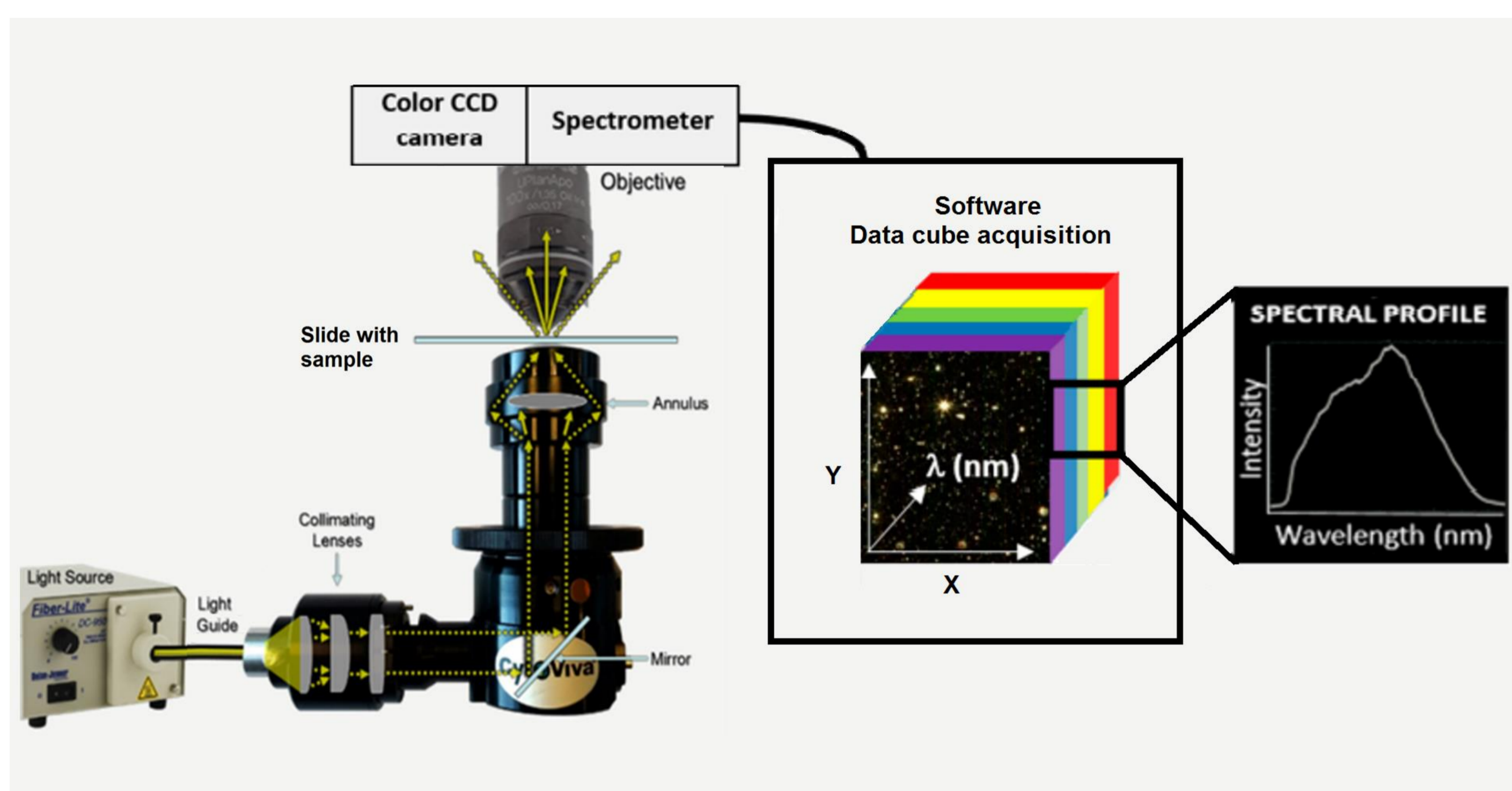
# CYTOVIVA® MICROSCOPE

## Introduction

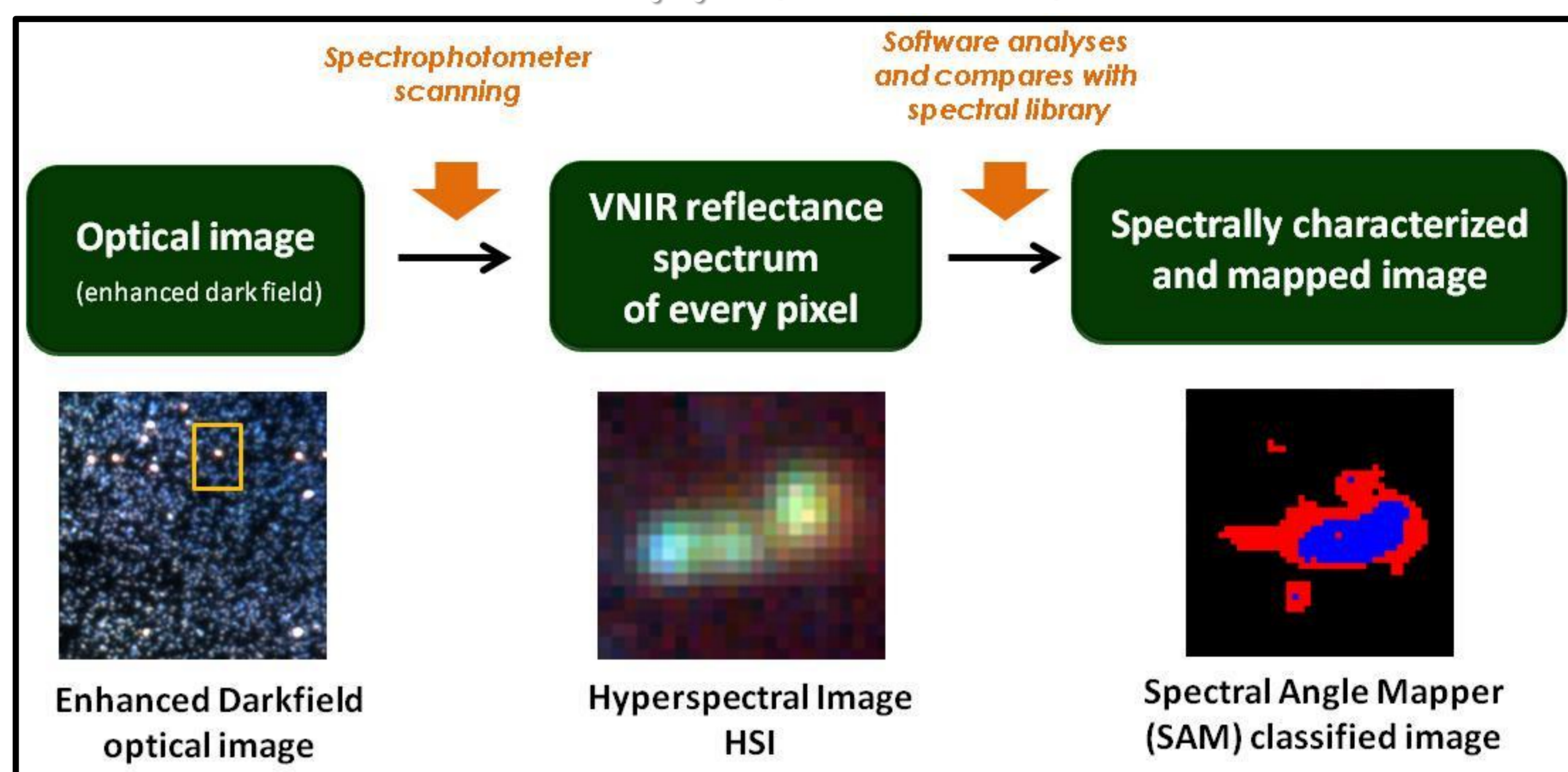
- The Cytoviva® microscope is a high signal-to-noise **dark field optical microscope** coupled to a **hyperspectral imaging system** that enables spectral characterization of the observed samples by capturing their visible-near infrared (VNIR, **400 – 1000 nm**) reflectance spectrum at high spectral resolution.
- The source light is coupled to the dark field condenser via light guide. Special collimating lenses and mirrors create a very narrow, oblique angle of light that can be precisely focused onto the sample, resulting in very intense scatter from nanoscale samples against a very dark background.
- This system allows to confirm the **presence** and the **location** of nanoscale materials



## Hyperspectral-Enhanced Dark Field Microscopy (HEDFM) basics

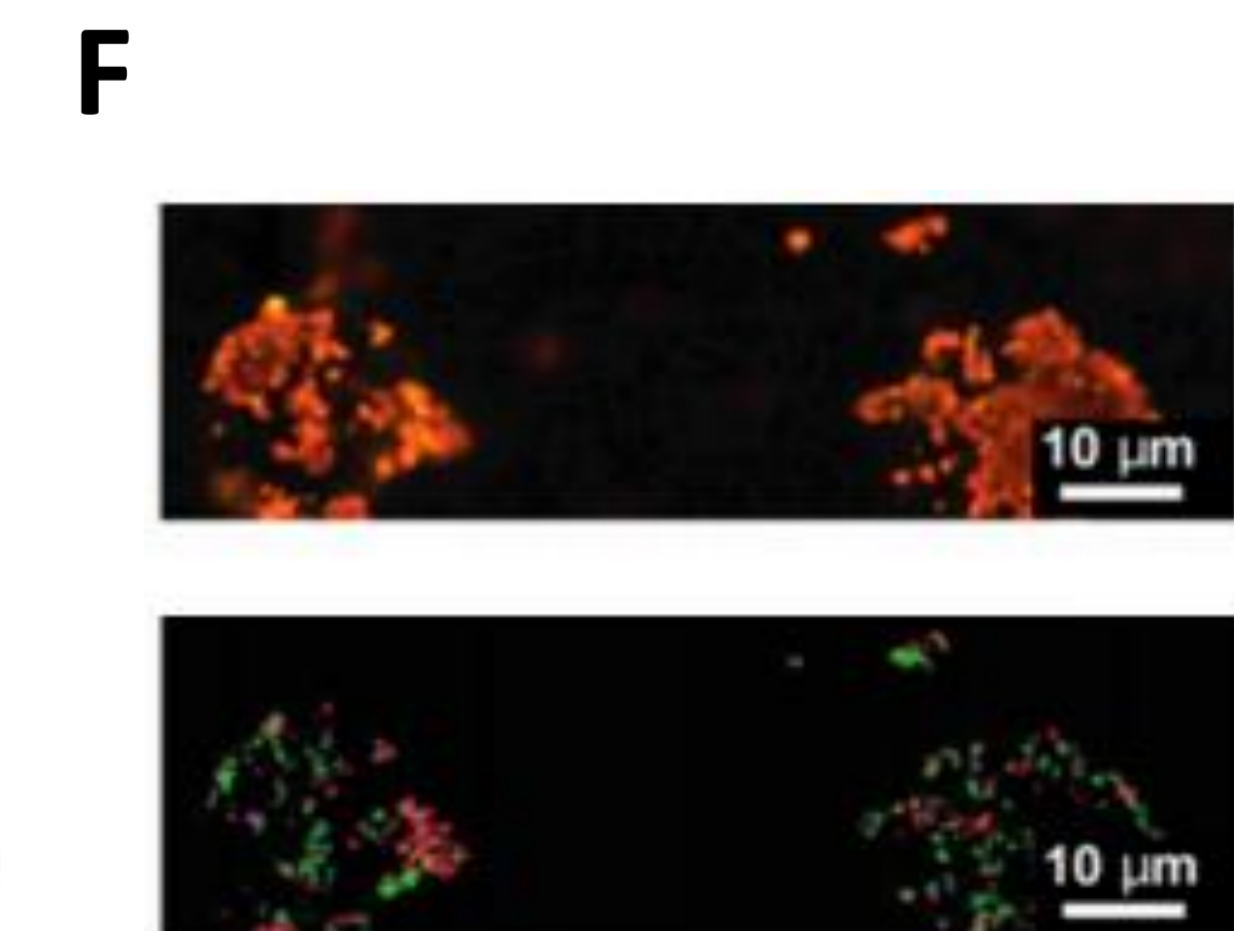
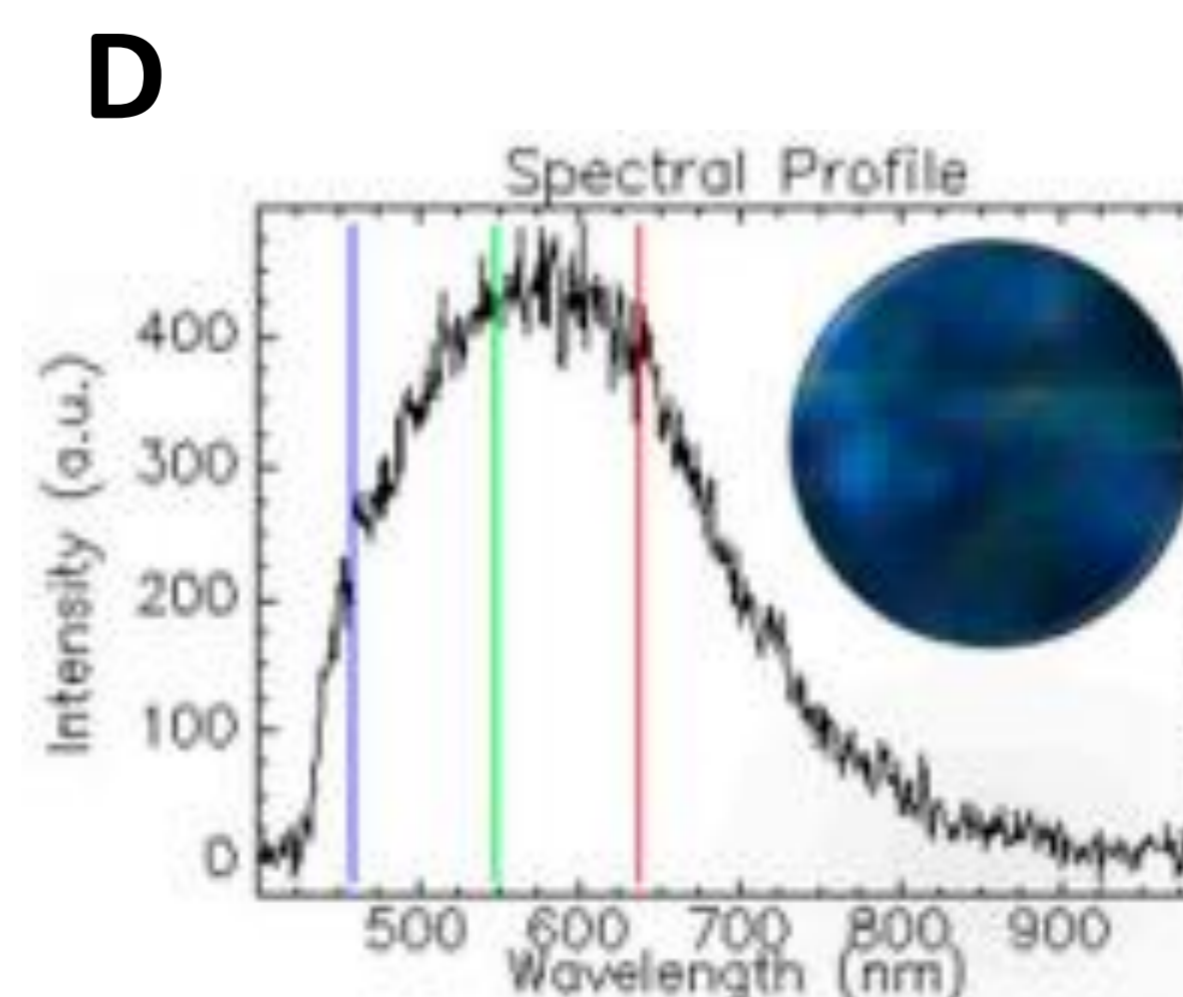
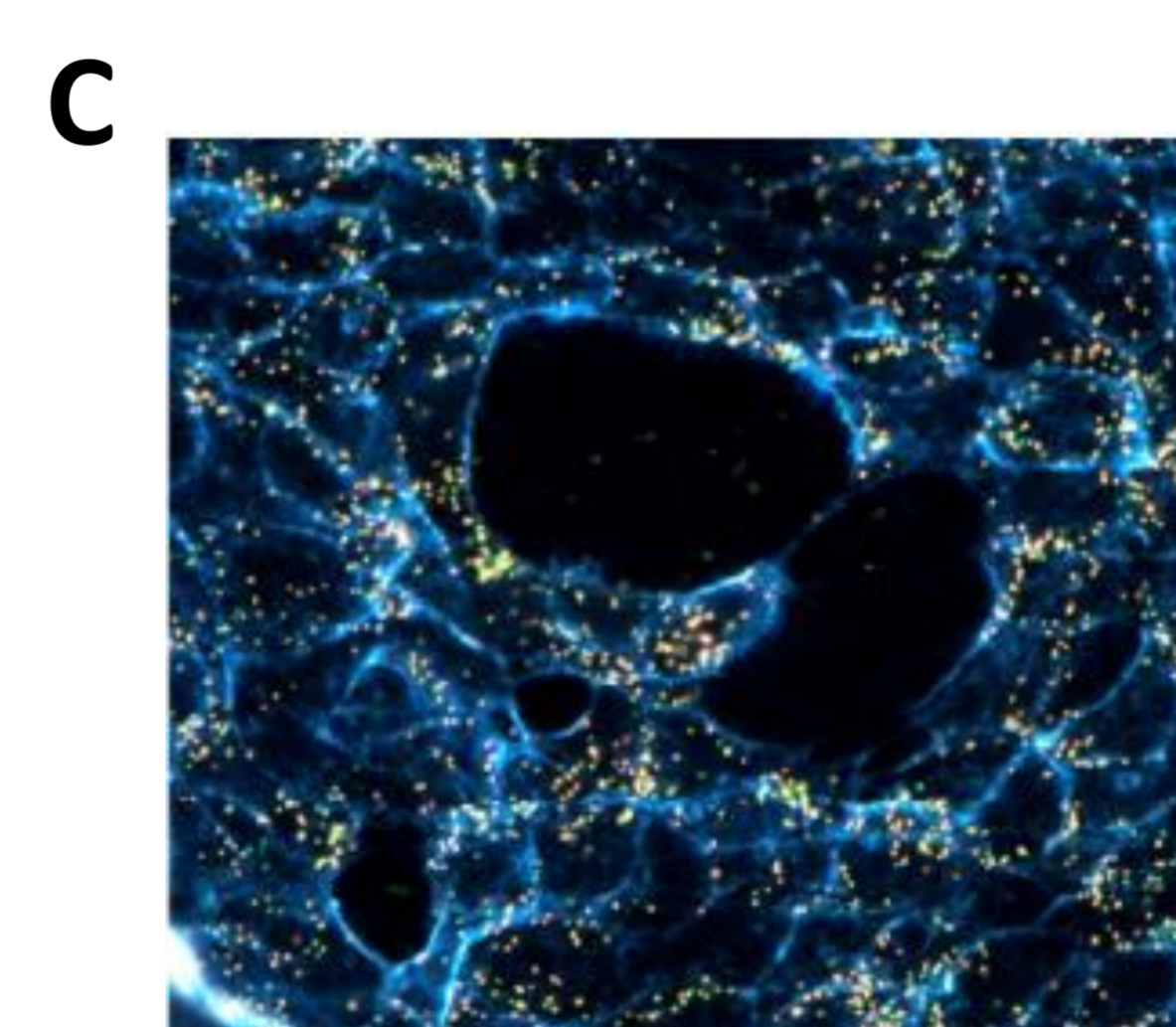
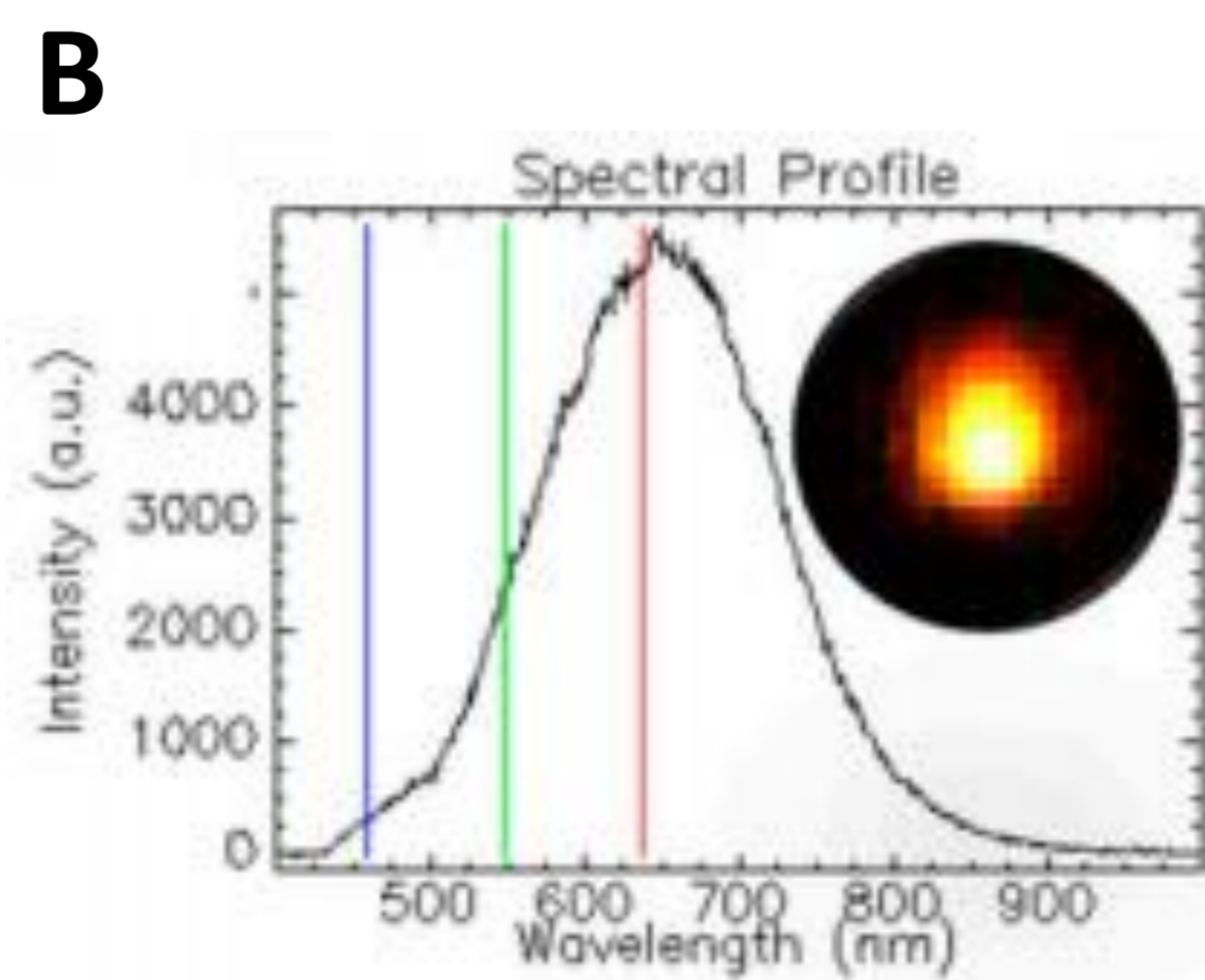
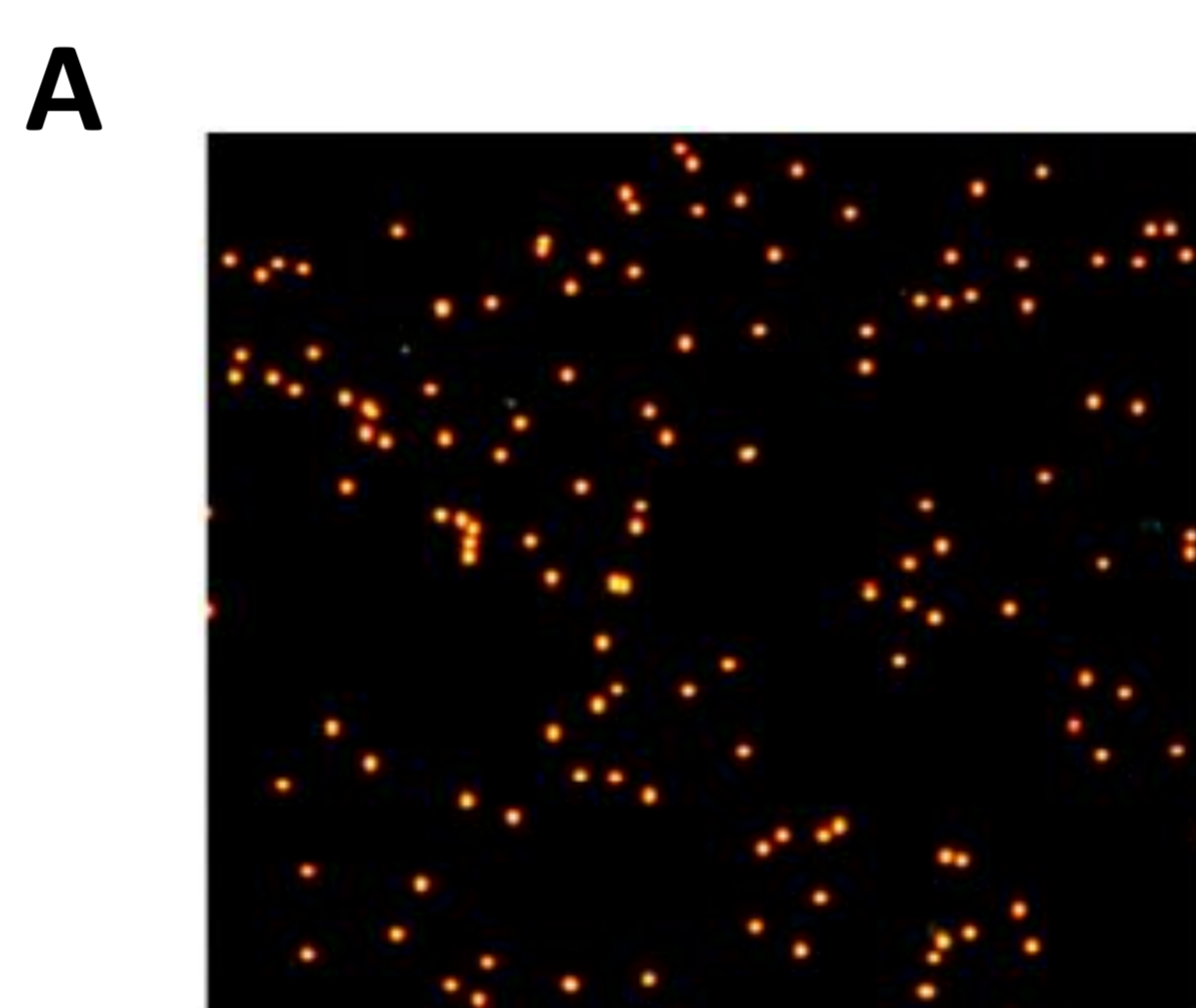


Schematic illustration showing dark field optics coupled with the spectrometer and the analysis of the hyperspectral data cube<sup>1,2</sup>



## Potential and Biomedical Applications of the HEDFM technology

- ✓ Easy, non-destructive technique
- ✓ No sample preparation needed
- ✓ Observation of nanoscale materials < 50 nm
- ✓  $\lambda = 400 - 1000$  nm (VNIR)
- ✓ Spectral resolution: 1.5 nm
- ✓ Pixel size: 25 nm (100X objective)



A. Dark field image of Nanoparticles (NP); B. NP spectral profile; C. Dark image of cells in the presence of NP; D. Cytoplasmic membrane spectra; E. Dark field image of control cells; F. (up) Dark field image of cells treated with NP; (down) hyperspectral imaging showing the presence of NP in the cells<sup>3,4</sup>

## References

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