Title: Mueller polarimetric imaging for biomedical diagnosis		
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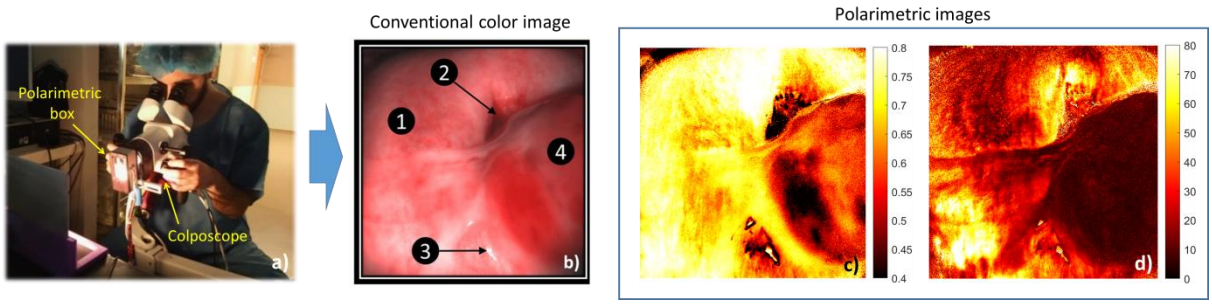
Research Area: Biophysics, Optics		
Methods: Optical Imaging, Polarized Light, Mueller polarimetry, Biomedical Diagnosis		

PhD track subject. The remarkable development of biomedical imaging over the last century has led to significant improvements in the detection and treatment of many diseases.
In particular, Mueller polarimetric imaging has proven to be a very promising technique for biomedical diagnosis as it allows the examination of large areas of a biological tissue, while revealing changes in its microstructural properties of scattering and anisotropy generated by the presence of a disease, even at an early stage.
The PICM laboratory is recognized as a world leader in the field of Mueller polarimetric imaging for the development of innovative medical devices capable of providing a significant breakthrough in the detection and treatment of various types of pathologies.
To meet this challenge, the PICM laboratory leads a multidisciplinary collaboration involving physicists, optical engineers, mathematicians, biostatisticians from several research laboratories and physicians from many hospitals.



a) A Mueller Polarimetric Colposcope (MPC) has been designed and fabricated at LPICM to explore the outer surface of cervical tissue in vivo for early cancer detection.
b) Conventional unpolarized RGB image of the cervix. 1) Healthy tissue. 2) Entrance to the cervical canal. 3) Specular reflections. 4) Polyp.
c) Depolarization image characterizing the scattering properties of the tissue.
d) Retardance image characterizing the anisotropic properties of the tissue.
Polarimetric images provide better contrast for polyp detection than the conventional unpolarized RGB image.

References

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