



UPPSALA  
UNIVERSITET

# INTERNATIONAL SCIENCE PROGRAMME ISP

## Shedding Light on the Living World

### Context:

Investigating the living world at macro- and micro-scale enables a better understanding of the environment surrounding us and helps tackle related challenges. Light technologies have proven to be one of the suitable supports to building effective and least expensive instruments to interrogate biological specimens. The African Spectral Imaging Network (AFSIN) has been committed over the past decade to harnessing both light technologies and data science as a means to address health problems.

### Methodology:

Through multidisciplinary partnerships, the most relevant health problems aligned with our expertise and experience are identified and both technical and scientific solutions are provided.

### Results:

Among other things, we have developed:

- A spectral imaging microscope capable of identifying, discriminating, and classifying biological specimen contents from unstained samples for diagnosis purposes and drug-target studies, with a specific focus on malaria automatic, rapid and accurate detection.
- An innovative and patented spectrometer capable of determining optical parameters in dense media like biological samples, surpassing Beer-Lambert Law.
- An entomological lidar remotely identify, discriminate, and classify ento-fauna at the scale of mosquito on a range of kilometers.

### Impact of AFSIN activities:

- Eight workshops organized with an average participation of 10 countries and 50 participants.
- AFSIN helped to equip six research laboratories in six countries.
- Graduation of about 50 master's and 20 PhD students.
- AFSIN action has helped to slow down the drain brain in the participants countries, in the area of optical and imaging spectroscopy.
- AFSIN action has helped to increase the number of female scientists in the participants countries.
- Members of AFSIN have received National Prize for Research and Innovation.

Keywords: Instrumentation, biophotonics, data science, optical spectroscopy, medical optics.

<https://isp.uu.se/isp-60-years/#events>