# TANGO

*In-Vivo Hair Shine Analysis*



# Features

### VIVO / VITRO

Our imaging technology enables analysis of light on any kind of in-vivo or in-vitro hair samples

### FAST MEASUREMENT

Image your hair sample - head or swatch - in just a few seconds

## ADAPTABLE SETUP

The head sensor can be place on a tripod or in a more fixed setup for different situations

## PLUG & PLAY

No special installation is needed - easy cabling and the system is ready to go

[📄 GET A QUOTE]

# Overview

Hair shine is usually measured in a constrained environment. Even our SAMBA Hair needs a hair sample to be put on a cylindrical geometry to correctly separate the light components, and to ensure that a shine band is visible and that we can compute a luster coefficient.



Pulsed Illumination

CAMERA

SETUP
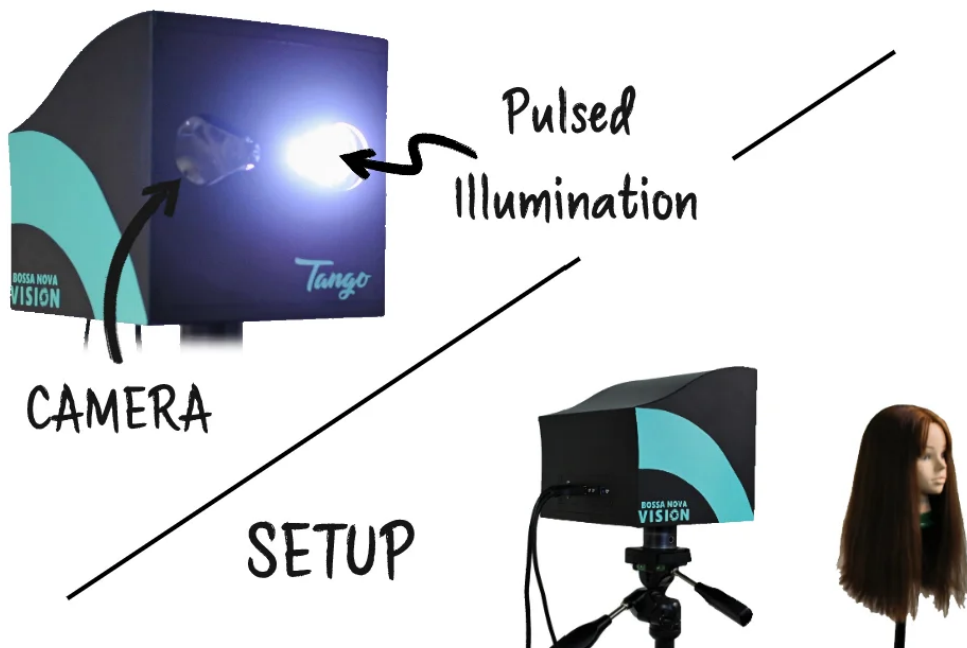
The TANGO system relies on a different and innovative polarization imaging technique to **separate the different components of the light** reflected and diffused by hair fibers **without having to constrain the fibers** in any way. Therefore, the TANGO system enables the analysis of shine in more diverse conditions (specific haircut, ethnic fibers, etc.) than the usual technique.

# Principle

The TANGO system enables the separation of the components of light coming from a hair fiber which are :

- External reflection (or Shine)
- Internal reflection (or Chroma)
- Diffusion

The TANGO uses a method based on the polarization signature carried by each component. This method requires the use of a pulsed polarized illumination system coupled with a polarization analysis imaging system

The illumination system goes through a Polarization State Generator (PSG). As a result, the emitted light is polarized, its polarization state being controlled by the PSG. Light coming back from the illuminated sample goes through a Polarization State Analyzer before going to the imaging system (video camera).

To separate the three components, N images are acquired (N≥4), corresponding to N couple of polarization states (PSGN, PSAN). The acquisition of each image and the control of PSG and PSA is done using a computer. The N acquired images are then analyzed and processed to separate the contributions for each pixel of the image.
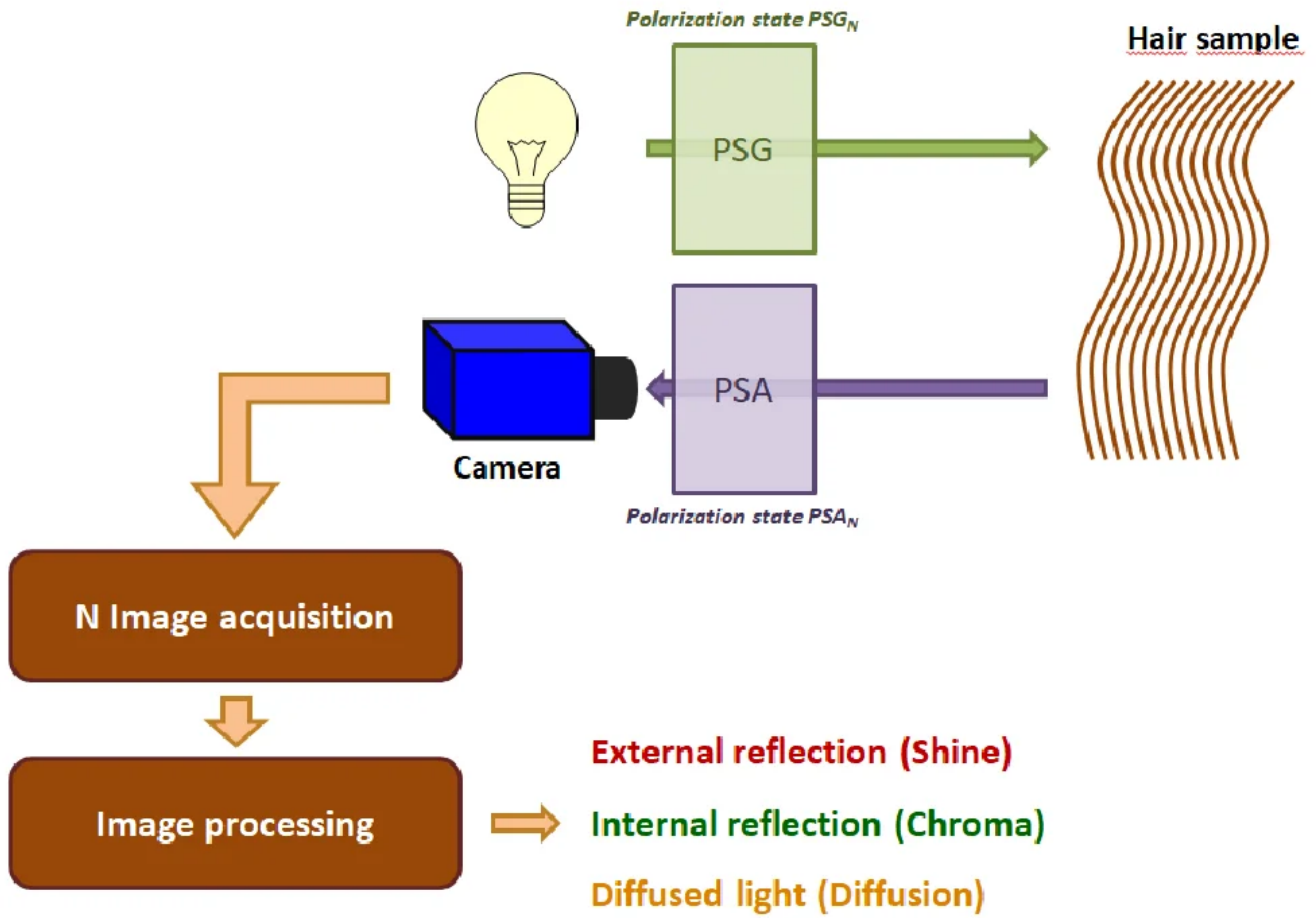
Some examples of the resulting processed images are shown below. Three hair swatches of blond, brown and black colors have been put on a cylinder. The shine and chroma bands, as well as the diffused light are perfectly separated.
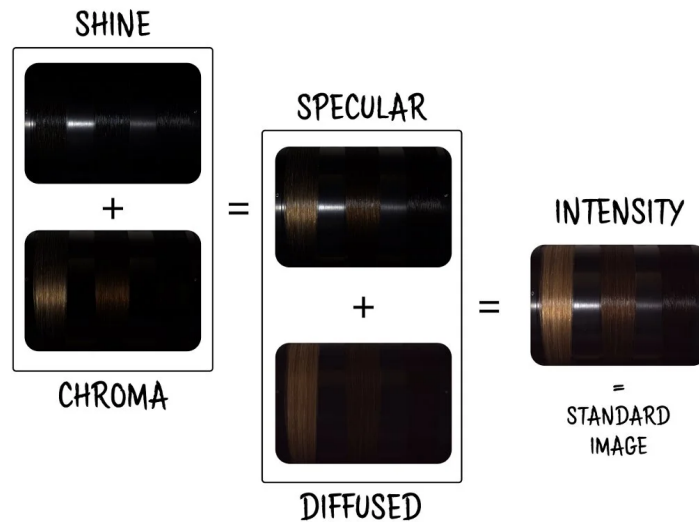


Below are the images obtained on a single mannequin head, for which the TANGO enables separation of Shine, Chroma and Diffused.

| Intensity | Shine | Chroma | Diffused |

# Specifications

| GENERAL SPECIFICATIONS | |
|---|---|
| Camera | Color Camera 12 bits |
| Resolution | 2,464 x 2,056 pixels |
| Focus | adjustable up to 3 meters |
| Illumination | Pulsed White Led |
| Software | TANGO |
| | Windows 10 |
| Measurement time | 1 second for a single accumulation |
| Calibration | Factory calibrated |
| Size | 9" x 8.5" x 8.5 " (230mm x 220mm x 220mm) |
| Power | 110/200 VAC, 50/60 Hz |

| DATA | |
|---|---|
| Data saved | Raw images (12 bits) Processed images (32 or 34 bits) |
| Data export | Images export (png) Excel for numerical data |

| HAIR SAMPLE SPECIFICATIONS | |
|---|---|
| Hair characteristics | Any type / shape / color In-vivo or vitro |