

Agrosta®Roxanne has been designed in 2023 in order to provide a simple and efficient colorimeter (spectrophotometer) coming with machine learning



Roxanne comes with :

- The measurement unit itself
- 2 softwares for Windows on a USB stick
- Usb cable



1/ SETUP

- Connect the USB stick :

 NEURAL_FILES_EXAMPLES	22/02/2023 14:59	Dossier de fichie...	
 Agrosta_Driver.EXE	24/01/2017 00:17	Application	238 Ko
 TEACH.exe	22/02/2023 17:15	Application	85 365 Ko
 USE.exe	22/02/2023 17:29	Application	98 031 Ko

- Then double click on **Agrosta_Driver** in order to install the driver
- Connect the Roxanne colorimeter to your computer using the Usb cable provided
- It should make a small sound as driver recognizes the device

2 executable files are available, corresponding to the 2 softwares (You can make a shortcut on your desktop if you want) :

- The first file, USE is the software for using the device, either with or without using machine learning (Roxanne can be used as a simple colorimeter)
- The second file, TEACH the software for teaching the device (Associating each sample category with a number) and creating a neural file (The neural file can be opened in the “use” software afterwards)

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Software TEACH :

- After having connected the device to your computer,
- Double click on TEACH
- The software starts immediately

Software USE :

- After having connected the device to your computer,
- Close the TEACH software if open
- Double click on the USE file
- The software starts immediately
- Please note that the 2 software cannot be opened simultaneously

2/ CALIBRATION

- The calibration has been made in our factory using a pure white CERTIFIED REFLECTANCE STANDARD from **labsphere** at a temperature of 20°C
- Please note that the cost of this standard is more than € 1500
- Thus it can be difficult to make the calibration in the same conditions at user location
- You can use any “pure white” sheet of paper in order to re-make the calibration if you want

3/ TEACHING SOFTWARE DETAILS

- Prepare your samples by category (Example with lemon hereafter, categories 1, 2 and 3)



- Connect your device to the computer, and start the TEACH software

Agrosta ROXANNE - Software for teaching ©

Category:

N° of Records: 2

Record in category = press space

Record teaching file

	415	445	480	515	555	590	630	680	Brigh.	InfraR	Neural	
405-425 nm	4 X 2	S 2 4	72	89	200	285	244	185	263	185	282	[9]
435-455 nm	72	S 1 3	40	51	134	194	182	141	176	119	319	[12]
470-490 nm	89											
505-525 nm	200											
545-565 nm	285											
580-600 nm	244											
620-640 nm	185											
670-690 nm	263											
Brightness	185											
900-1000nm	282											

Calibration

- First fill the category corresponding to the sample you are going to measure
- Then place the sample on the sensor head



- Then press the "SPACE" key on your keyboard in order to launch the measurement
- The aim of this software is to generate a neural file that will store the teaching model
- The more samples you test for each category, the more your neural file will be accurate

After having tested all your samples, and covered each category several times, you can click on the button "Record Teaching File" and then give a name to the file to be created (Extension .lak to be used afterwards in the User software)

4/ “USE” SOFTWARE DETAILS

- Connect your device to the computer, and start the USE software
- You can load a neural file if you want your samples to be classified – If you don't, Roxanne will just be used as a simple colorimeter
- Then place the sample on the sensor head



- Then press the “SPACE” key on your keyboard in order to launch the measurement

Agrosta ROXANNE - Software for users ©

N° of Records: 17

Measure = Press space | Export to Excel

	405-42	435-455nm	470-490nm	505-525nm	545-565nm	580-600nm	620-640nm	670-690nm	Brightness	Infrared	Neural Cat	Red	Green	Blue	L*	a*	b*	Chrom:	Hue
405-425 nm	59	S17 59 200 133 116 41 6 0 20 29 0	No neural	0	57	129	23.2	7.9	-48.5	49.2	-1.4								
435-455 nm	200	S16 144 69 22 46 46 168 371 569 127 195	No neural	172	0	38	34.5	64.9	30.1	71.5	0.4								
470-490 nm	133	S15 0 28 0 10 8 21 24 74 0 0	No neural	56	0	34	8.0	32.2	-8.7	33.4	-0.3								
505-525 nm	116	S14 97 50 2 28 23 111 312 410 82 131	No neural	155	0	18	27.2	69.4	34.0	77.3	0.5								
545-565 nm	41	S13 244 219 183 210 196 319 472 497 264 305	No neural	188	113	114	55.9	29.7	12.3	32.1	0.4								
580-600 nm	6	S12 442 461 402 470 484 461 443 432 443 404	No neural	179	184	176	74.2	-3.0	3.3	4.4	2.3								
620-640 nm	0	S11 151 310 244 190 109 74 65 115 120 68	No neural	59	88	158	38.5	11.8	-41.4	43.1	-1.3								
670-690 nm	20	S10 211 113 151 422 388 269 173 243 240 235	No neural	54	194	83	69.3	-59.5	44.5	74.2	2.5								
Brightness	29	S9 445 470 436 456 463 461 441 448 434 419	No neural	181	180	180	73.3	0.4	-0.2	0.5	-0.5								
900-1000nm	0	S8 0 14 0 3 0 0 0 0 0 0	No neural	12	0	27	-1.1	13.2	-16.6	21.2	-0.9								
		S7 66 212 146 125 46 10 0 24 38 0	No neural	0	61	133	24.8	7.0	-48.4	49.0	-1.4								
		S6 107 145 62 55 36 102 188 222 73 86	No neural	133	0	98	25.8	65.5	-23.4	69.6	-0.3								
		S5 148 68 22 45 45 170 384 589 133 205	No neural	175	0	36	34.6	66.3	31.7	73.5	0.4								
		S4 95 50 1 27 22 110 310 409 77 127	No neural	154	0	17	26.9	70.0	34.1	77.9	0.5								
		S3 1000 1000 1000 1000 1000 1000 1000 1000 1000 1000	No neural	255	255	255	100.0	-0.0	0.0	0.0	3.0								
		S2 484 1000 1000 1000 1000 1000 1000 1000 1000 738	No neural	246	255	242	101.1	-9.1	8.2	12.2	2.4								
		S1 0 0 0 0 0 0 0 0 0 0	No neural	0	0	0	0.0	0.0	0.0	0.0	0.0								

Calibration

No neural

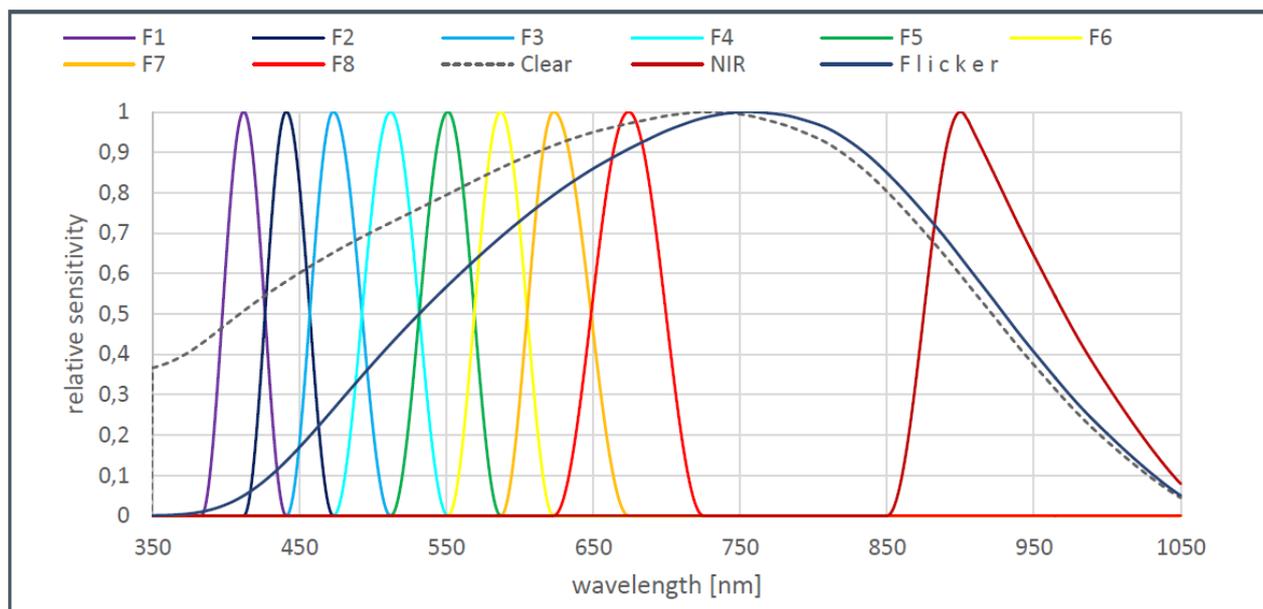
- Once you have finished to measure your samples, you can click on the button “Export to Excel” in order to save the data

5/ SPECIFICATIONS

Agrosta®Roxanne is a spectrophotometer that measures the reflectance on a sample (between 0 and 1000 after calibration) for 9 different wavelengths

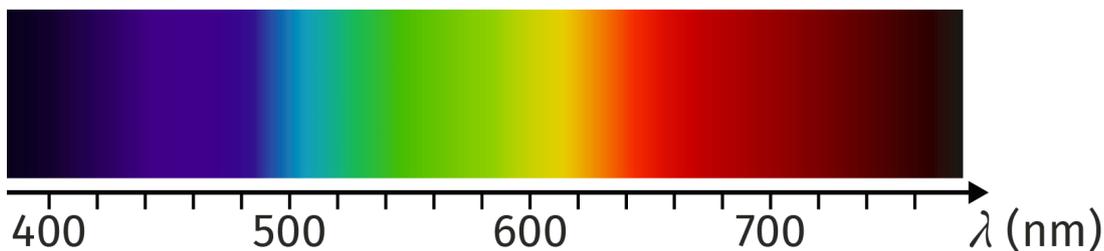
Those 9 wavelengths cover the full visible range as well as near Infrared

Normalized Spectral Responsivity



The accuracy on each wavelength for the visible range is $1/1000 = 0.1\%$, which is extremely good

The accuracy on Infrared is $10/1000 = 1\%$



The room temperature has an incidence on measurements – If the room temperature varies of more than 5°Celsius, re-make the calibration procedure using the small mirror provided