

Supplementary

Table S1 LEDs parameters for the acquisition of the images for each LED and the possible combinations.

LEDs	Shutter	Gain
All LEDs	1000 μ s	1
NIR	1000 μ s	1
Vis	1000 μ s	1
450	1000 μ s	1
525	1000 μ s	1
610	1000 μ s	1
750	180000 μ s	1
810	180000 μ s	1
851	180000 μ s	1
870	180000 μ s	1
890	180000 μ s	1
930	180000 μ s	1
940	900000 μ s	9
970	900000 μ s	9
1050	900000 μ s	9
1085	900000 μ s	9

Section S1 – commercially available tablets acquired general information

Pentasa[®] 1g (API: Mésalazine 1g) is an intestinal anti-inflammatory drug produced by FERRING SAS. The appearance of the drug is: white, grey to light brown speckled oval shape tablet an imprinted-on both sides with Pentasa[®] (Labelled P01) [32]. Doliprane[®] 1000 mg (API: Paracetamol 1000 mg) is an analgesic and antipyretic drug produced by SANOFI. The appearance of the drug is: white oval shape tablet with an imprinted-on top of the tablet with 1000 (Labelled D01) [33]. Red-coated tablet that was available in the laboratory and were used due to their unique color (Labelled R01). All tablets were used as well for the first step in the development of the device due to their unique physico-chemical properties, shape and size that allows to identify the capabilities of the device with different samples.

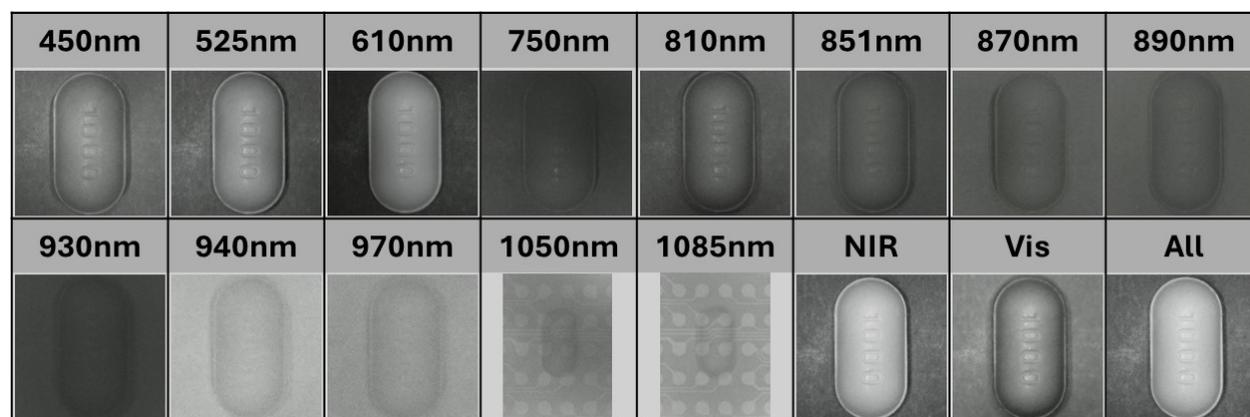


Fig S1 Images of Doliprane[®] tablet with the prototype for each LED alone followed by the visible range, NIR range, and all LEDs on. LEDs 1050 and 1085 follow the same acquisition protocol as the other LEDs but show reflections of the LEDs and circuitry in the captured images due to their proximity to the sensor's limits.

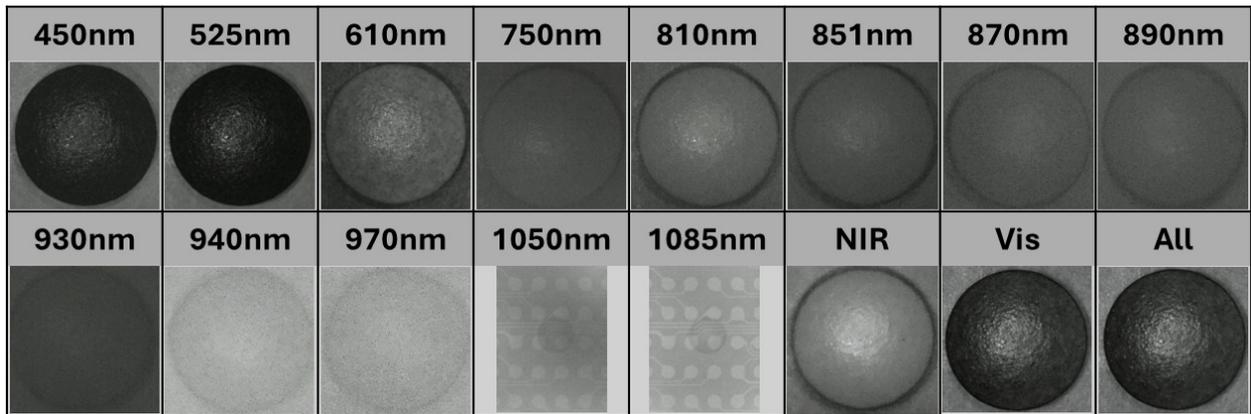


Fig S2 Images of a red-tablet with the prototype for each LED alone followed by the visible range, NIR range, and all LEDs on. LEDs 1050 and 1085 follow the same acquisition protocol as the other LEDs but show reflections of the LEDs and circuitry in the captured images due to their proximity to the sensor's limits.

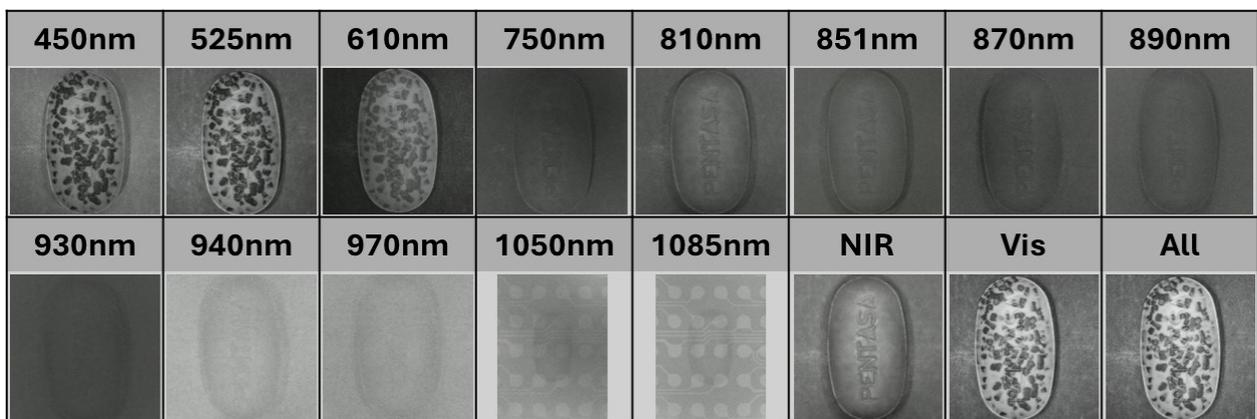


Fig S3 Images of Pentasa® tablet with the prototype for each LED alone followed by the visible range, NIR range, and all LEDs on. LEDs 1050 and 1085 follow the same acquisition protocol as the other LEDs but show reflections of the LEDs and circuitry in the captured images due to their proximity to the sensor's limits.

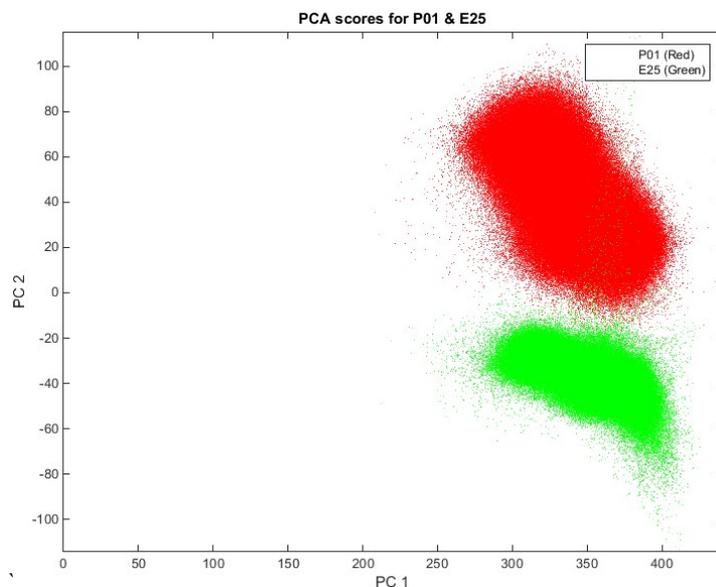


Fig S4 Scatter plot illustrated for PC 1 and PC 2 for Pentasa® (P01) and 100% (E25) API test tablets. Each color represents red (Pentasa®) and green for E25 (100%).

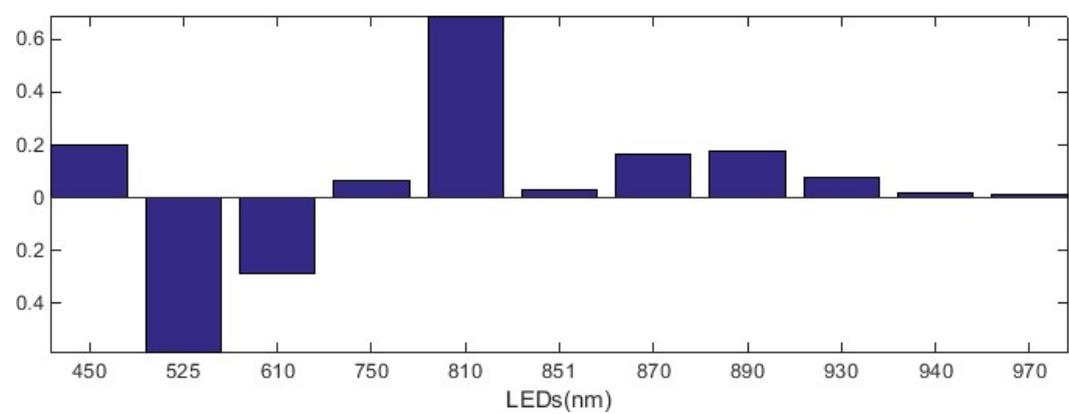
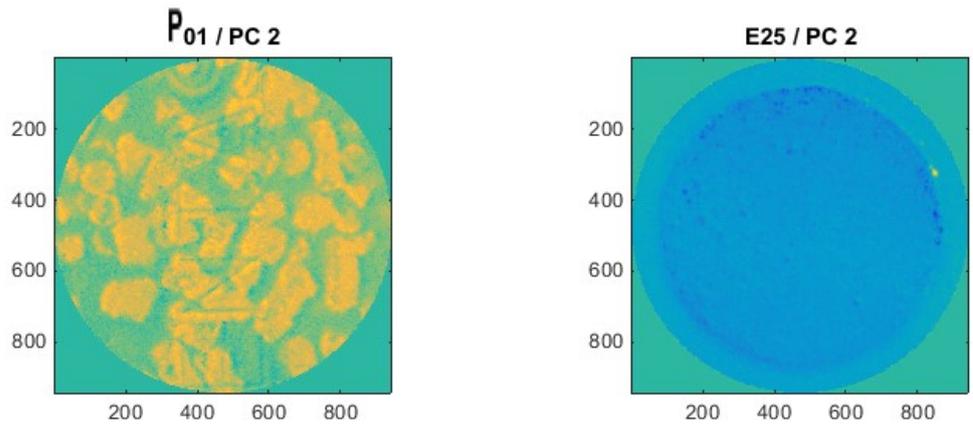


Fig S5 Plots of PCA images and plot of the multispectral response for Pentasa® (P01) and 100% (E25) API test tablets. Each image represents the contribution of PC2. The blue bars illustrate each LED contribution from 450 to 970 nm.

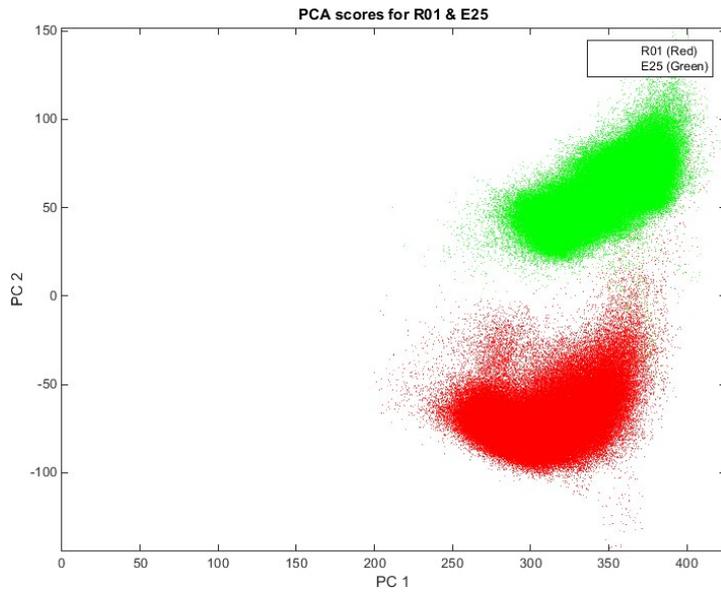


Fig S6 Scatter plot illustrated for PC 1 and PC 2 for Red Tablet (T01) and 100% (E25) API test tablets. Each color represents red (Red Tablet) and green for E25 (100%).

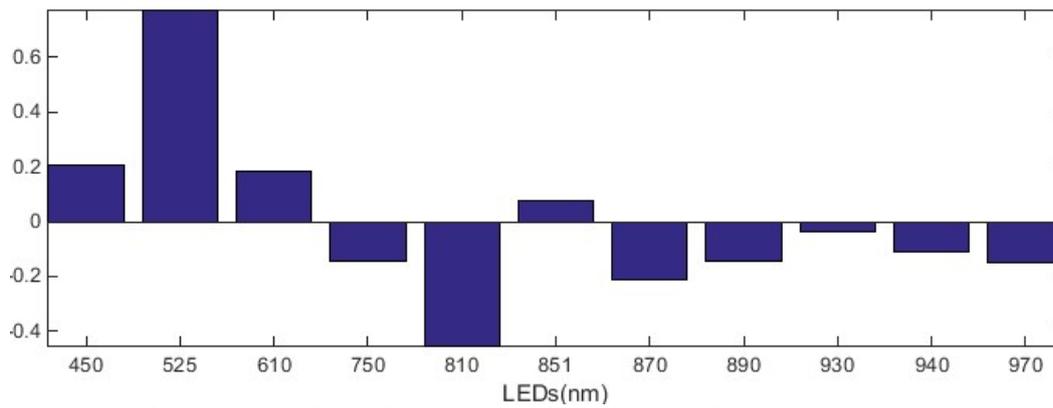
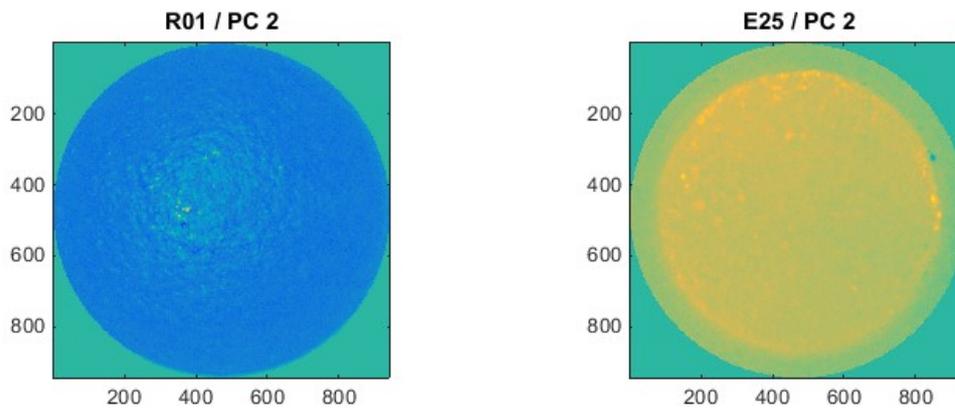


Fig S7 Plots of PCA images and plot of the multispectral response for Red Tablet (R01) and 100% (E25) API test tablets. Each image represents the contribution of PC2. The blue bars illustrate each LED contribution from 450 to 970 nm.

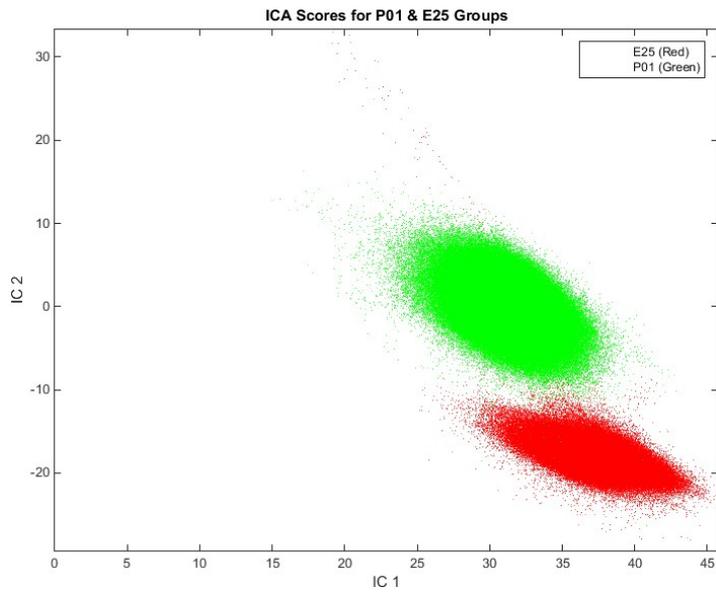


Fig S8 Scatter plot illustrated for IC 1 and IC 2 for Pentasa® (P01) and 100% (E25) API test tablets. Each color represents green for Pentasa® and red for E25 (100%).

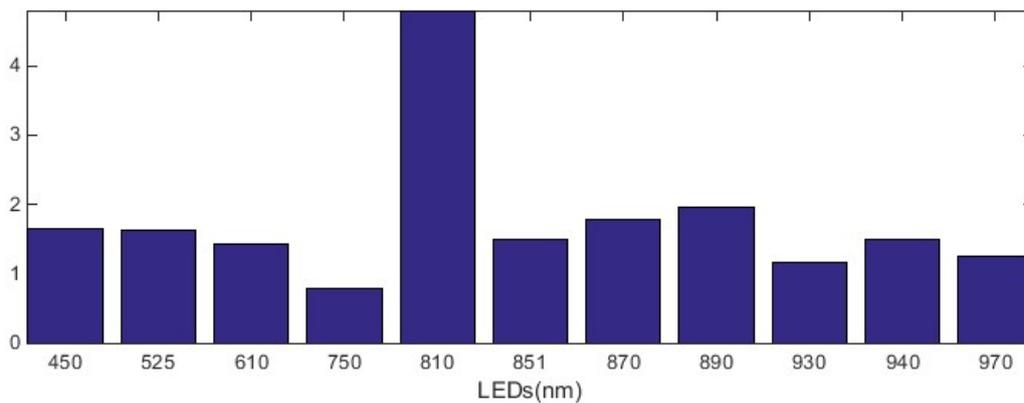
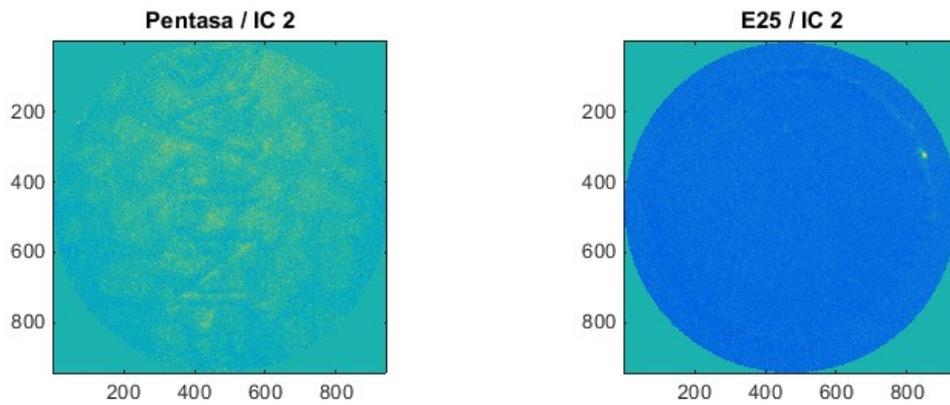


Fig S9 Plots of ICA images and plot of the multispectral response for Pentasa® (P01) and 100% (E25) API test tablets. Each image represents the contribution of IC2. The blue bars illustrate each LED contribution from 450 to 970 nm.

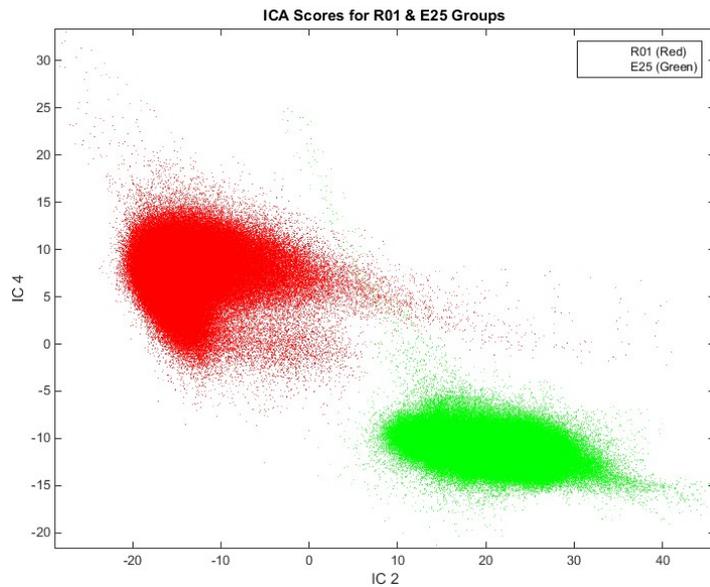


Fig S10 Scatter plot illustrated for IC 4 and IC 2 for Red Tablet (R01) and 100% (E25) API test tablets. Each color represents red (Red Tablet) and green for E25 (100%).

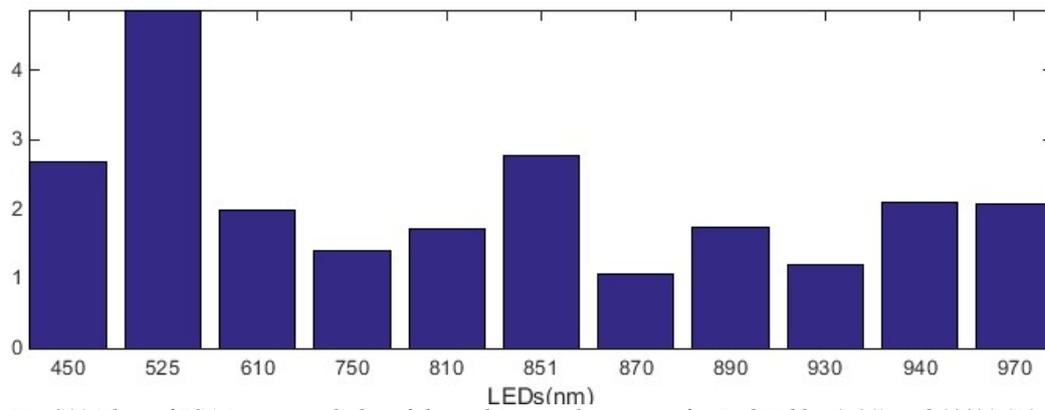
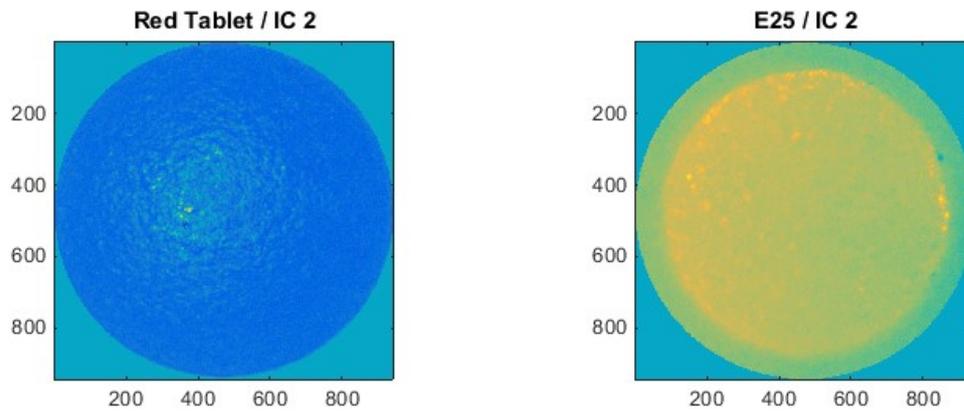


Fig S11 Plots of ICA images and plot of the multispectral response for Red Tablet (R01) and 100% (E25) API test tablets. Each image represents the contribution of IC2. The blue bars illustrate each LED contribution from 450 to 970 nm.

Supplementary data for PCA (S12) and ICA (S13)

Display of the contribution of the different components for ICA and PCA as well as the colorbar for the intensity of each LED, for 0% (A19) and 100% (E25) API test tablets

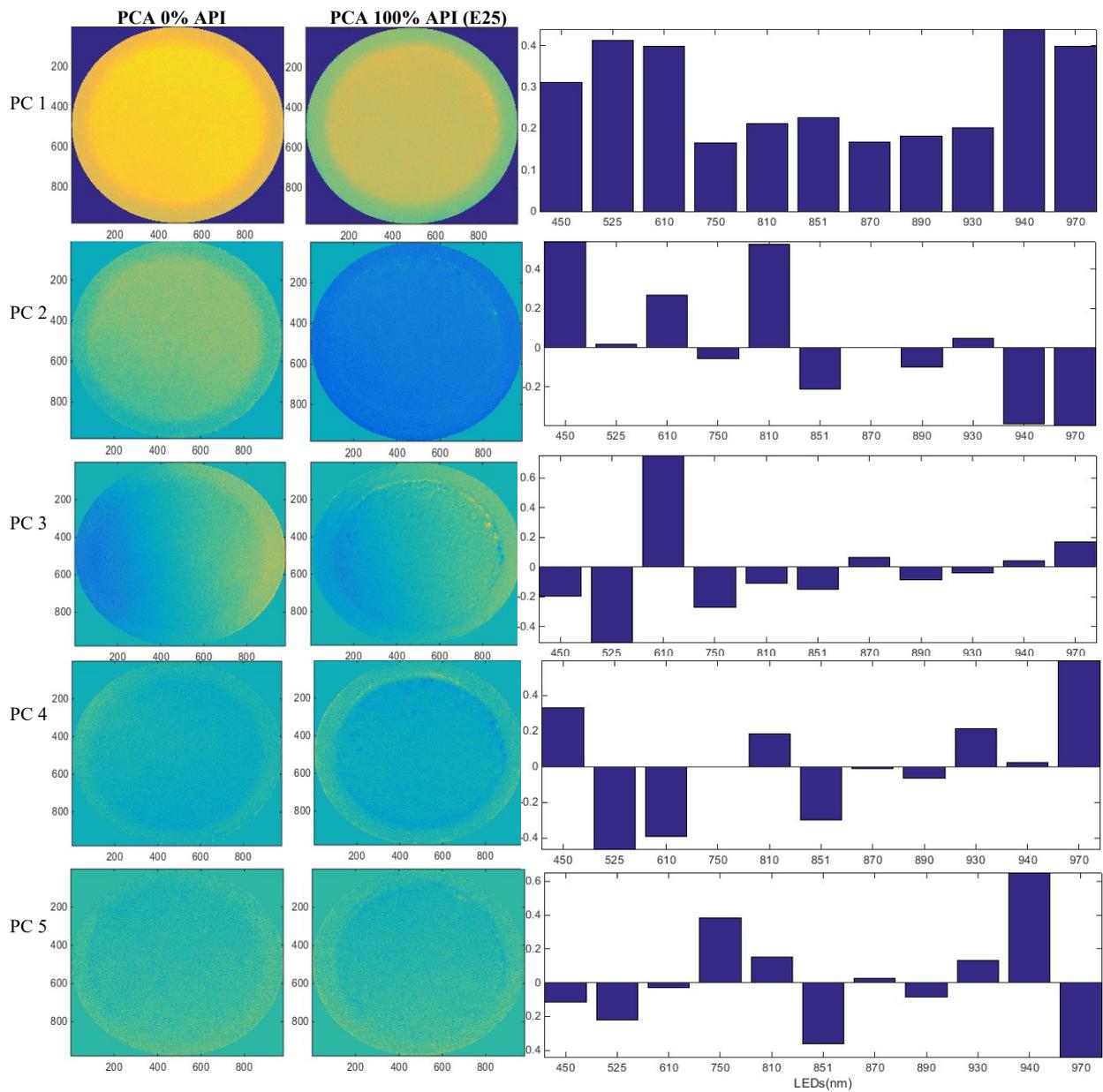


Fig S12 Plots of PCA images and plot of the multispectral response for 0% (A19) and 100% (E25) API test tablets. Each image represents the contribution of PC 1 to PC5. The blue bars illustrate each LED contribution from 450 to 970 nm.

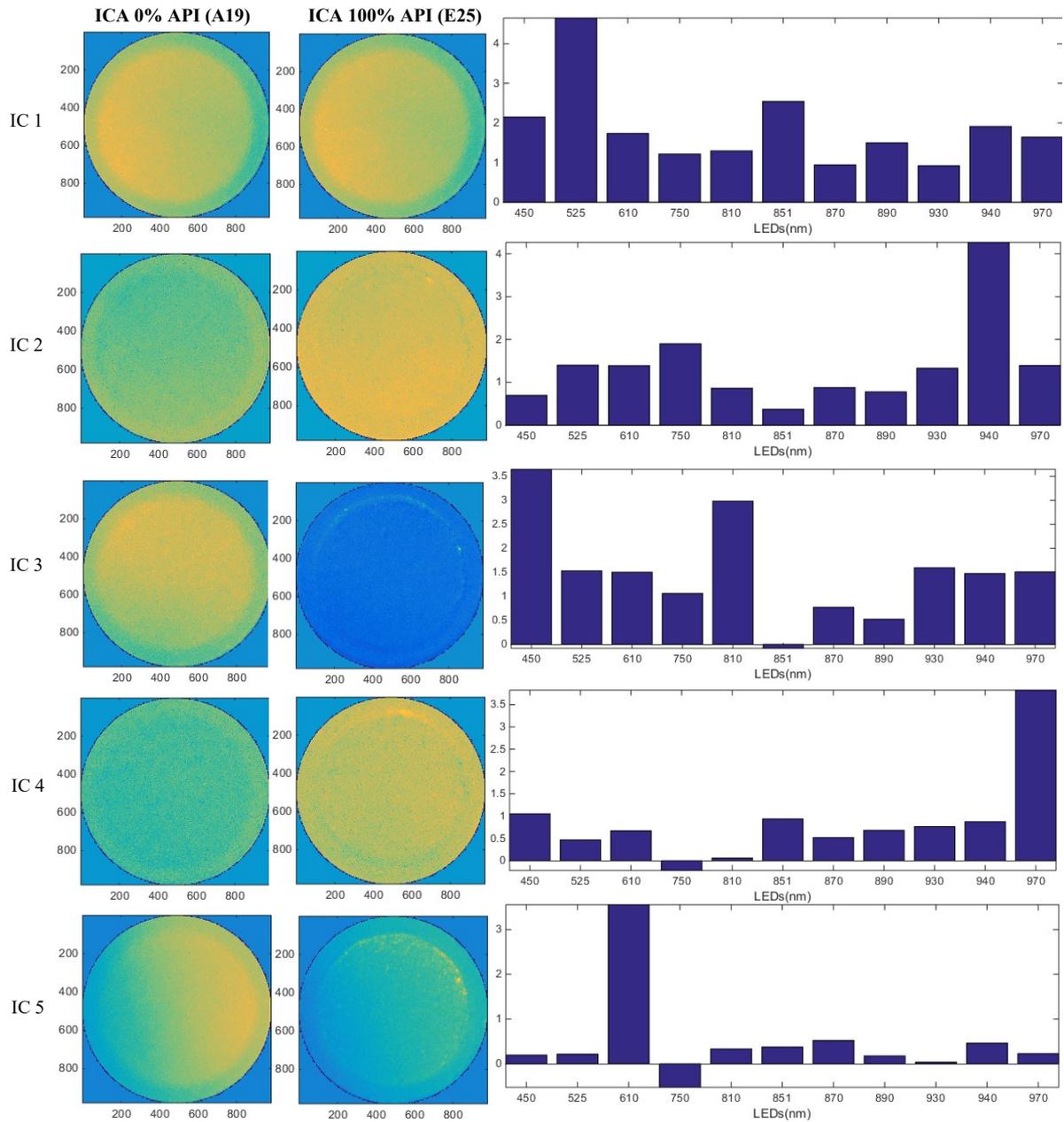


Fig S13 Plots of ICA images and plot of the multispectral response for 0% (A19) and 100% (E25) API test tablets. Each image represents the contribution of IC 1 to IC5. The blue bars illustrate each LED contribution from 450 to 970 nm

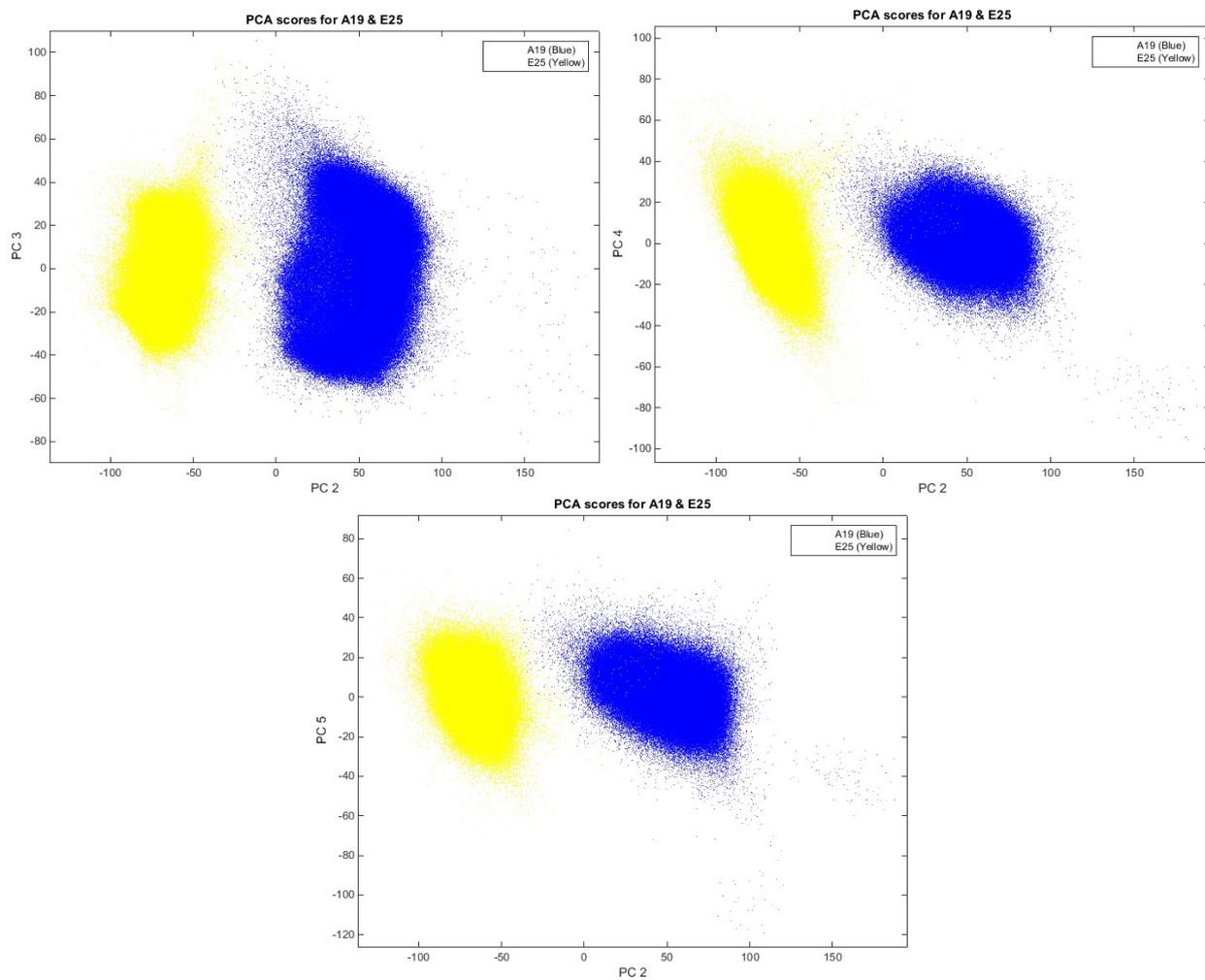


Fig S14 Scatter plots illustrated for PC 2 and IC 3, 4 and 5 for 0% (A19) and 100% (E25) API test tablets. Each color represents blue (A19) and yellow for E25 (100%).

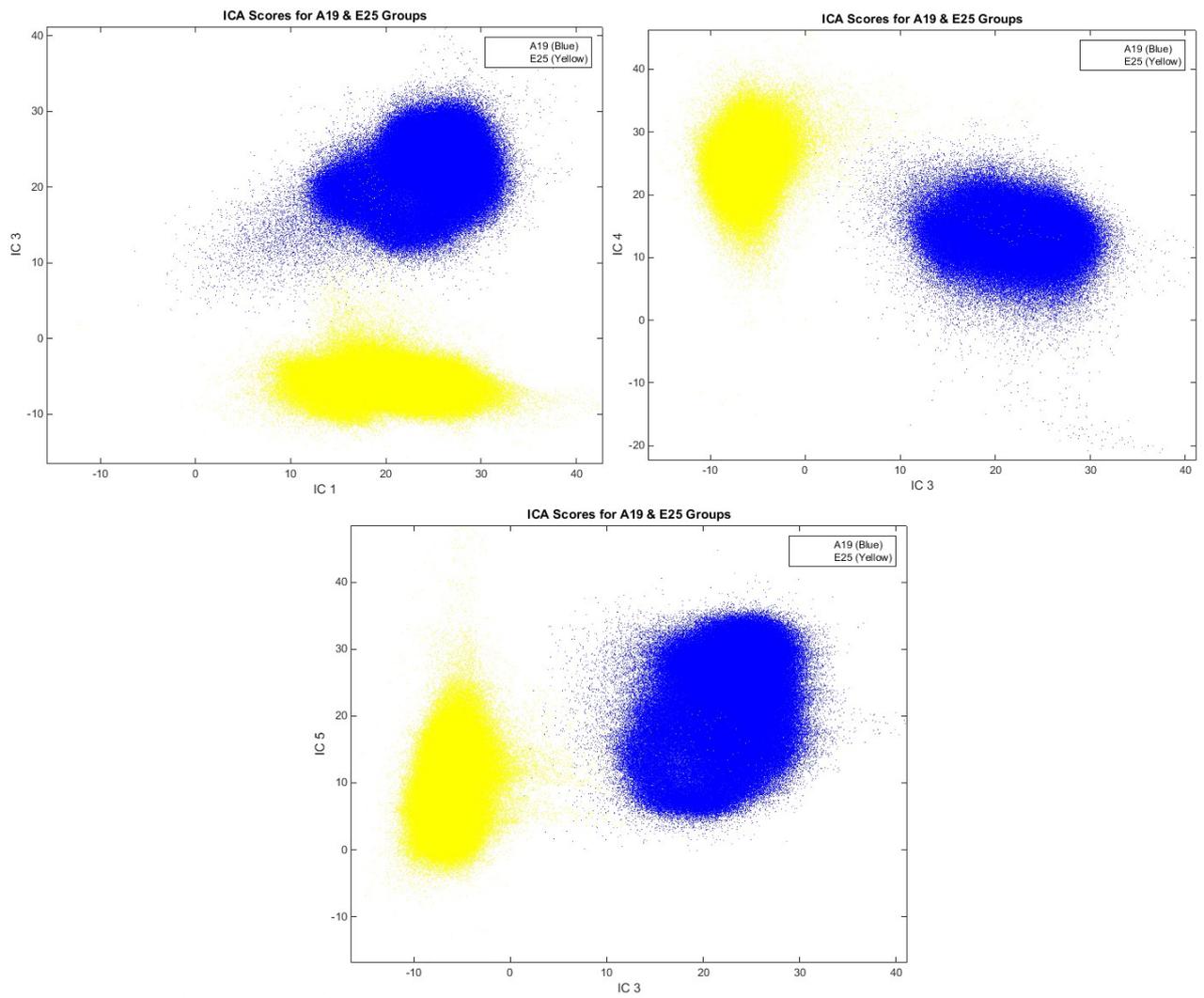


Fig S15 Scatter plots illustrated for IC 2 and IC 1, 4 and 5 for 0% (A19) and 100% (E25) API test tablets. Each color represents blue (A19) and yellow for E25 (100%).