



PURE SPECTRA

Passion for prisms

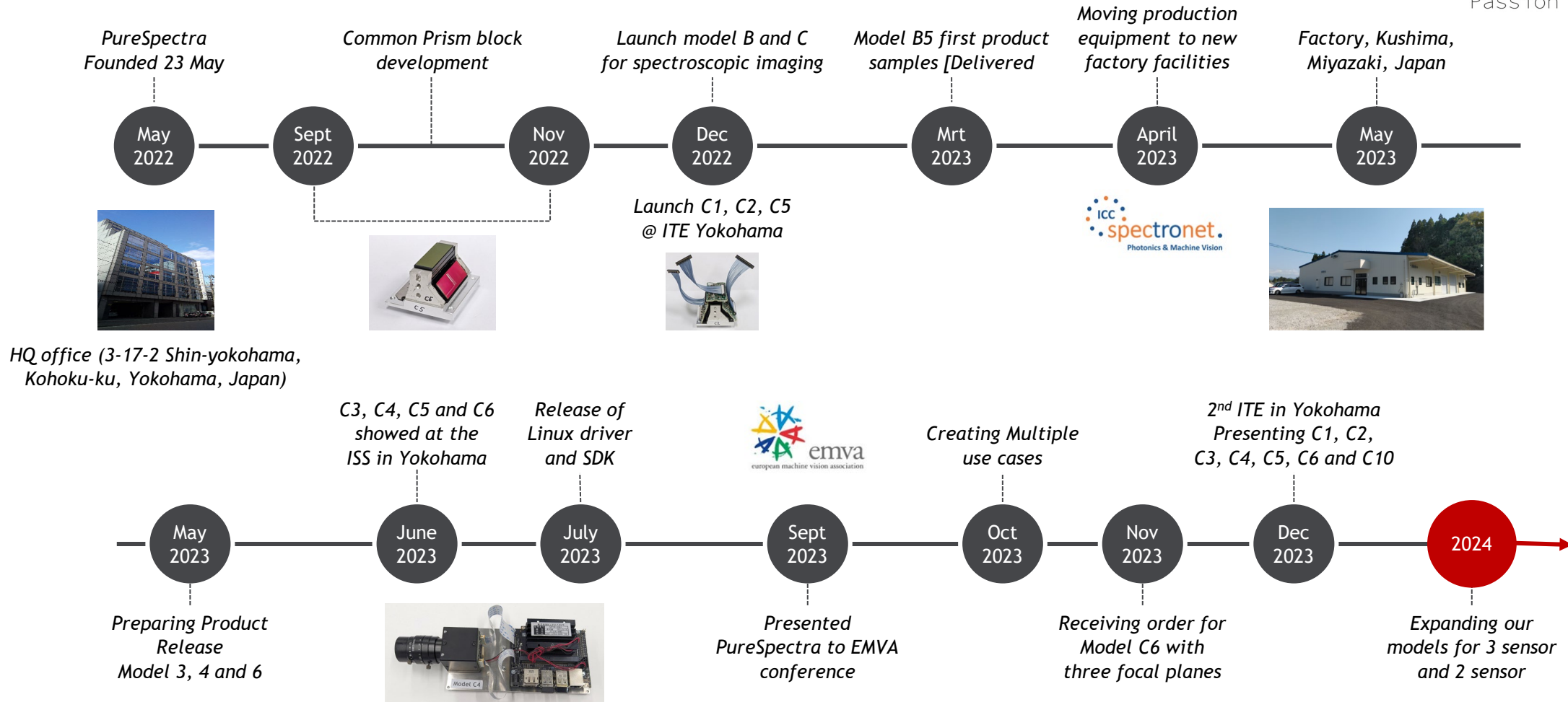
Prisms are our Passion

Enhancing your application and solving photonics problems with simultaneous use of two or three sensors

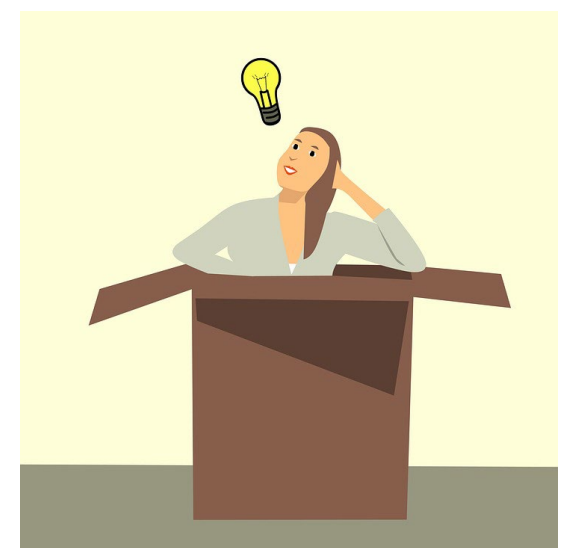
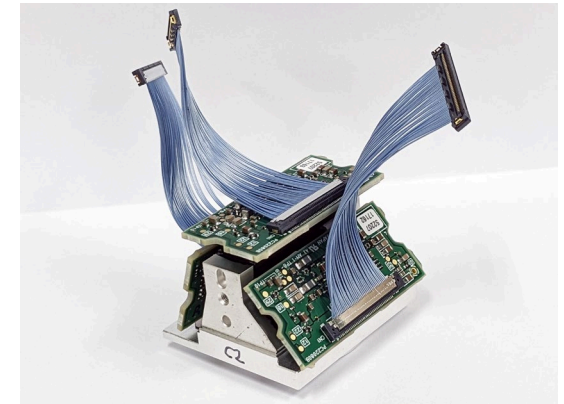
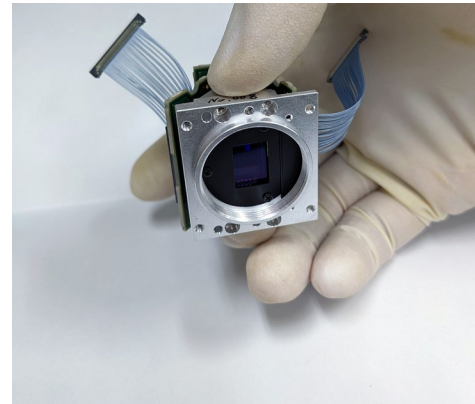
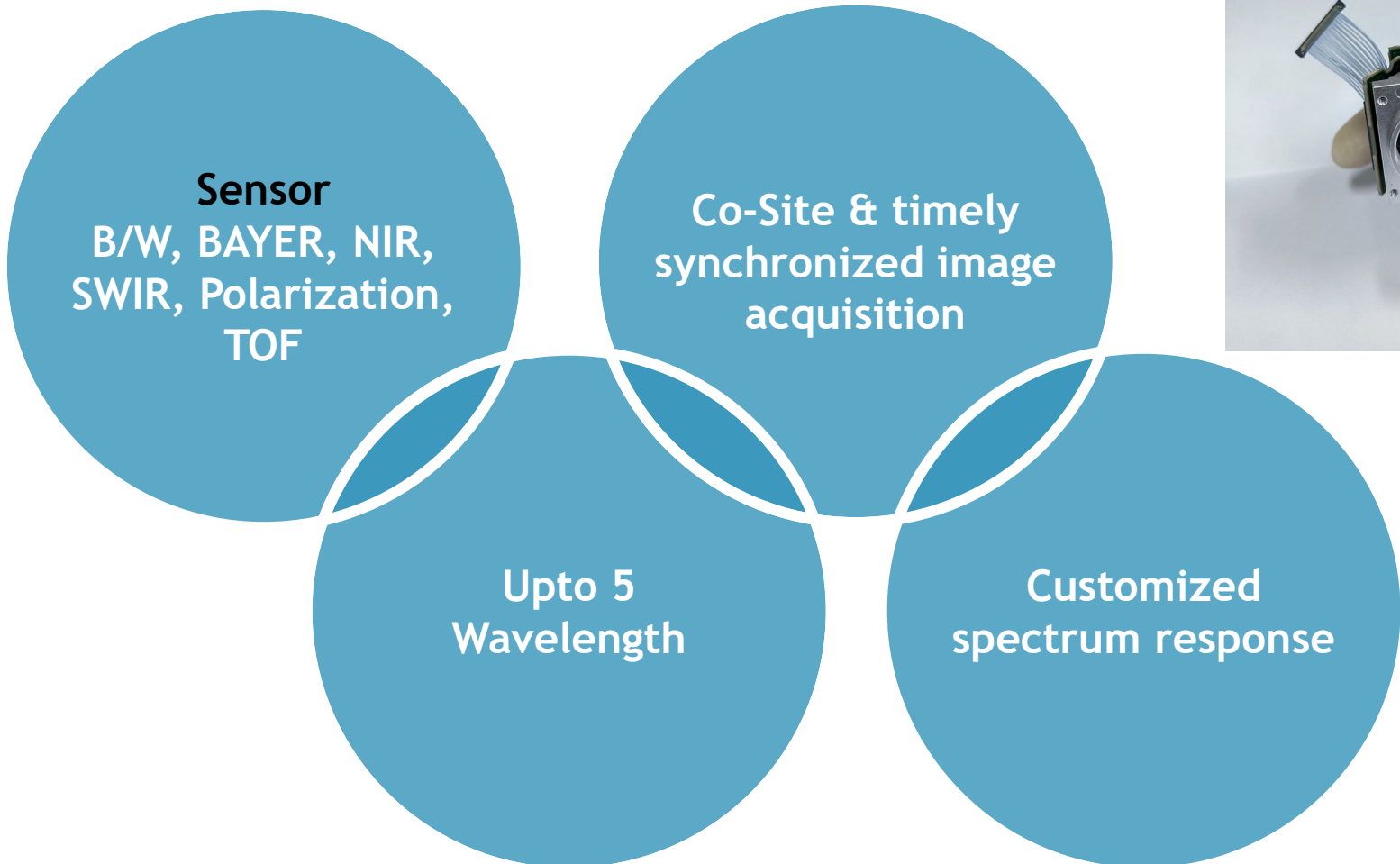
This presentation has been presented before at:



Company Introduction & History



We deliver 3 channels/ sensors in one optical view



“Complex assembly of sensors on prism is our passion”



“Multiple applications can be solved with limited wavelengths”

“For production monitoring control relative measurements is often enough”

Example: detecting water moisture content 958nm (A), 1200nm (R) & 1400nm (A)

Benefits:

- Prism solutions based on our common prism block is less costly
- Your knowledge [I.P.] of your optimal wavelengths needed for your application will be implemented in your own hardware

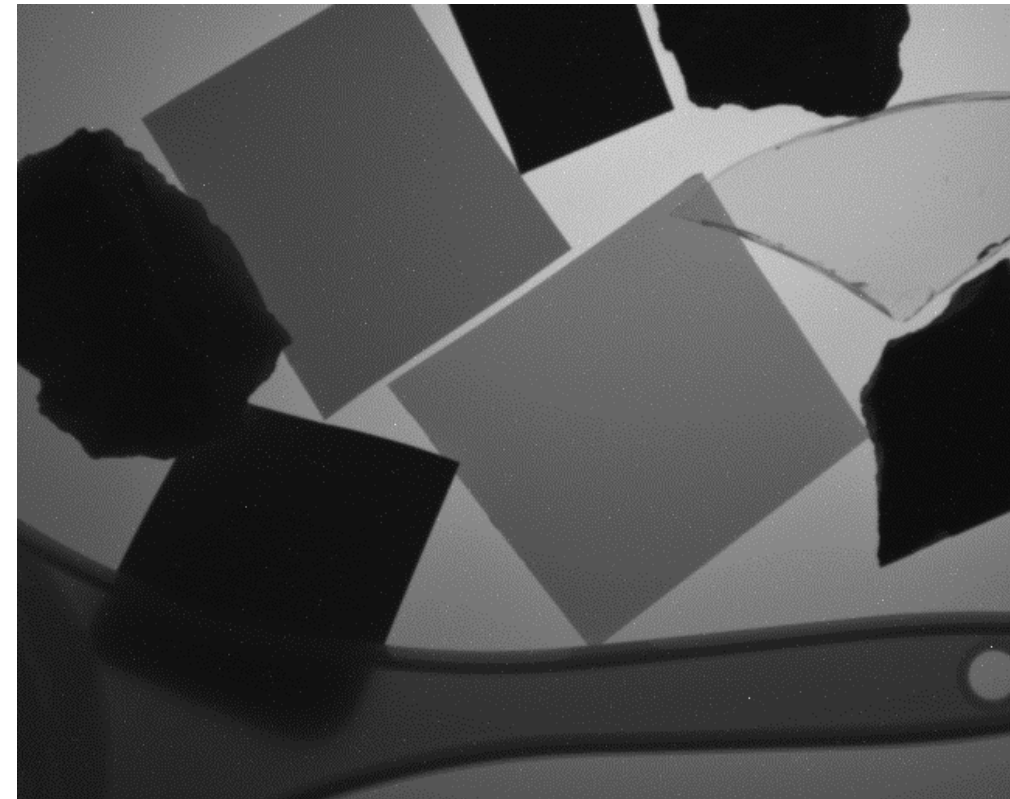
[Note: R = Reflectance, A = Absorption]

Use Case C5_Recycling

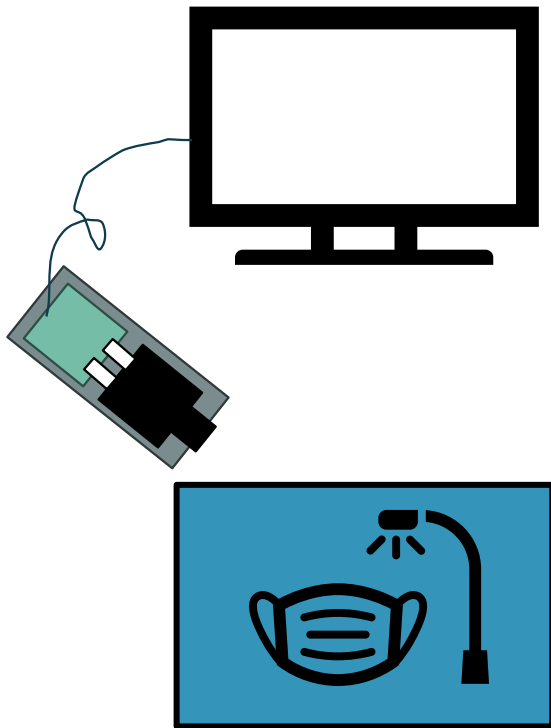
BAYER RGB Image



SWIR 1200nm



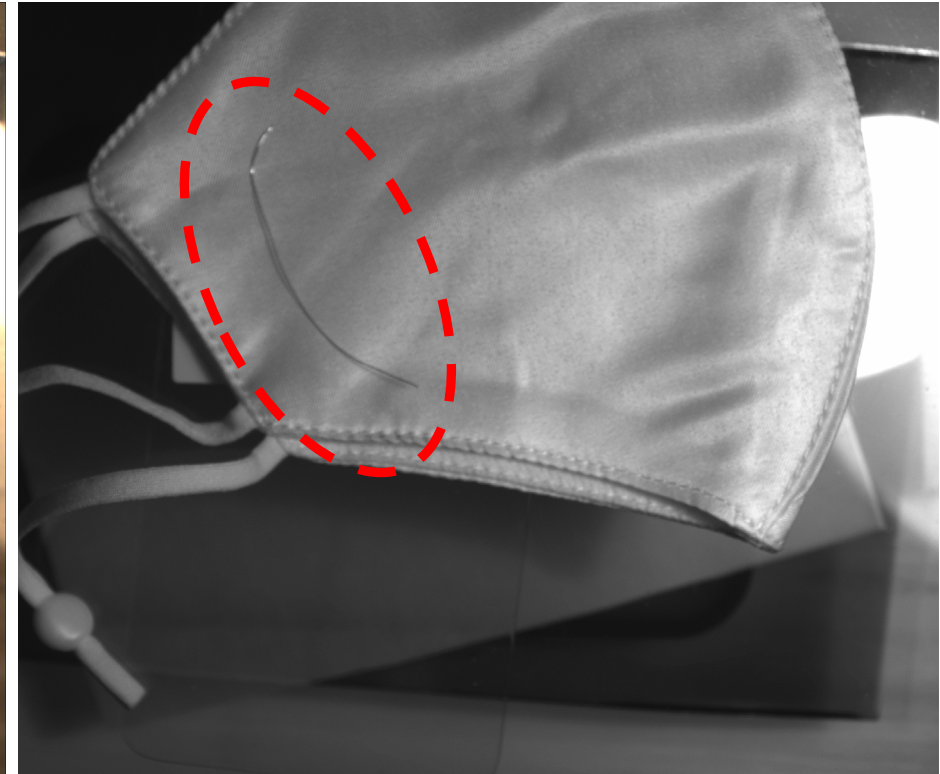
C3 Use Case, RGB + NIR



カラー画像



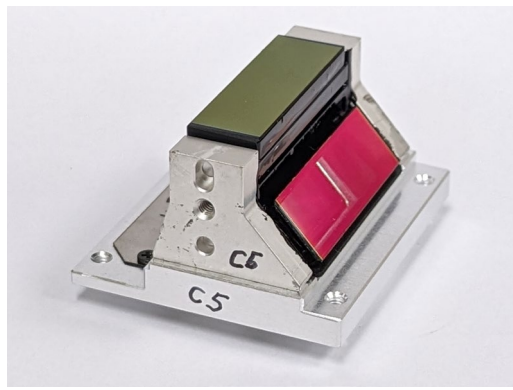
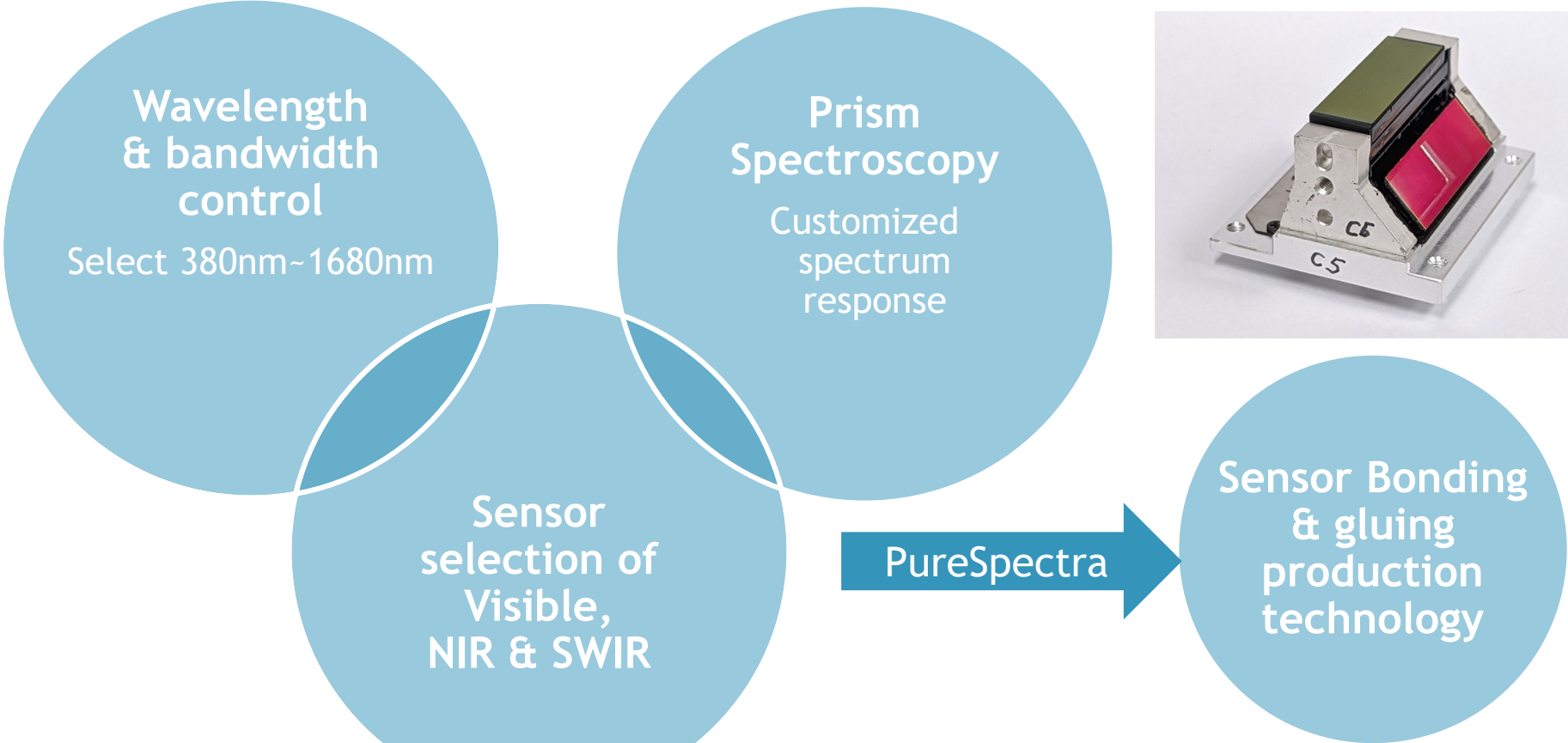
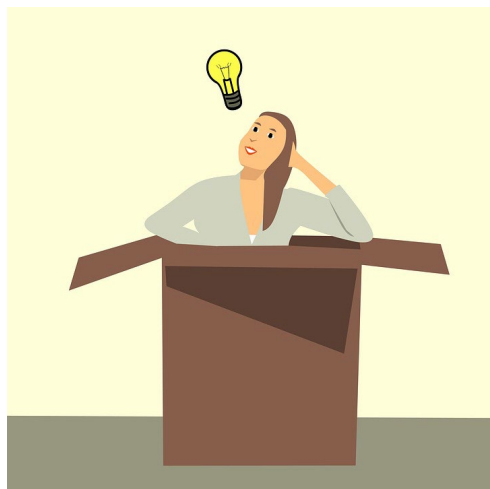
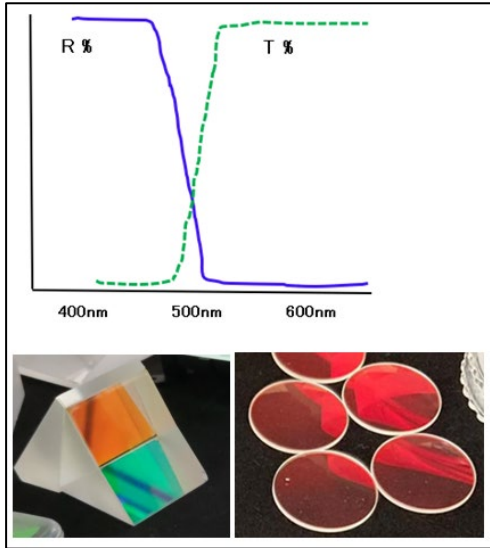
NIR



CONFIDENTIAL

Simultaneous Imaging of Color Images for Color Inspection and Foreign Matter Detection with NIR Images

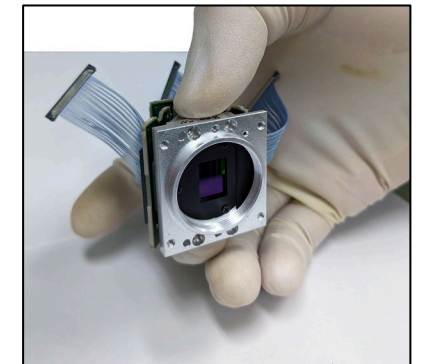
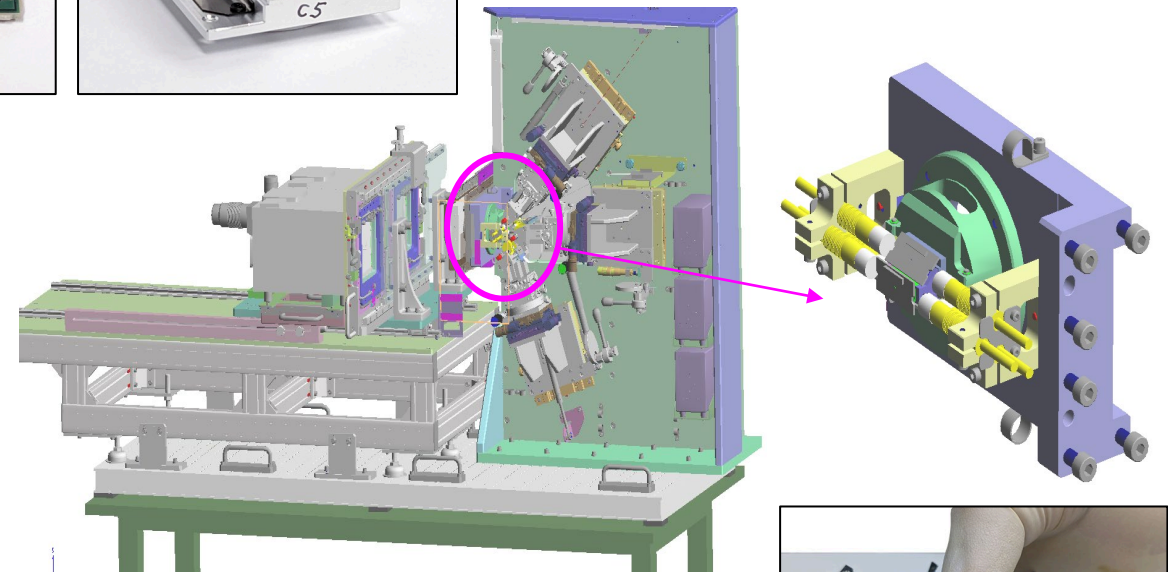
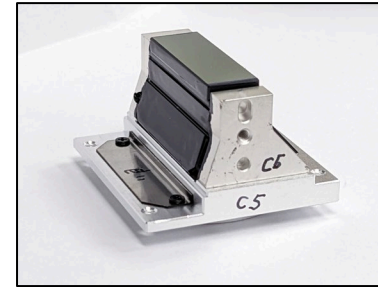
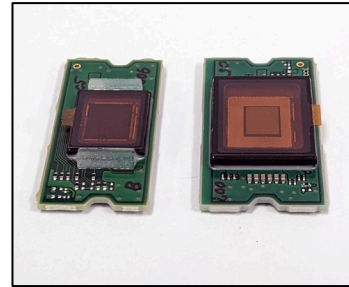
What ELSE can you do with prism technology?



“Sensor Bonding” is the process of preparing the prism and the fixtures

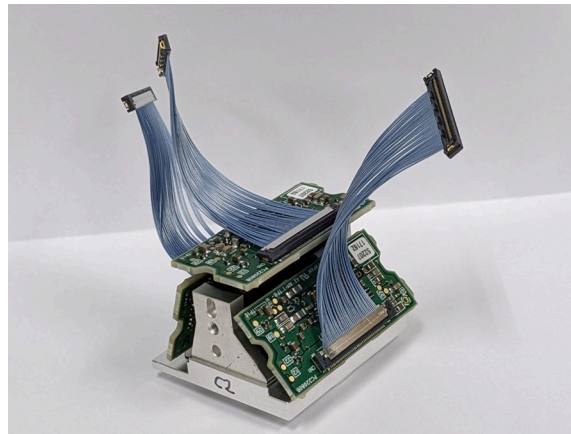
Why PureSpectra Ltd. What is our solution?

- Common prism block
 - Flexible OEM front-end module
 - Wide product range (>9 models)
 - Mechanically common but different optical performance
- Our bonding machine
 - <1 micron accuracy when gluing the prism and the image sensors
 - Offering accurate cross correlation
- Creation of Model B which is a (multi)-functional front-end module with C-Mount



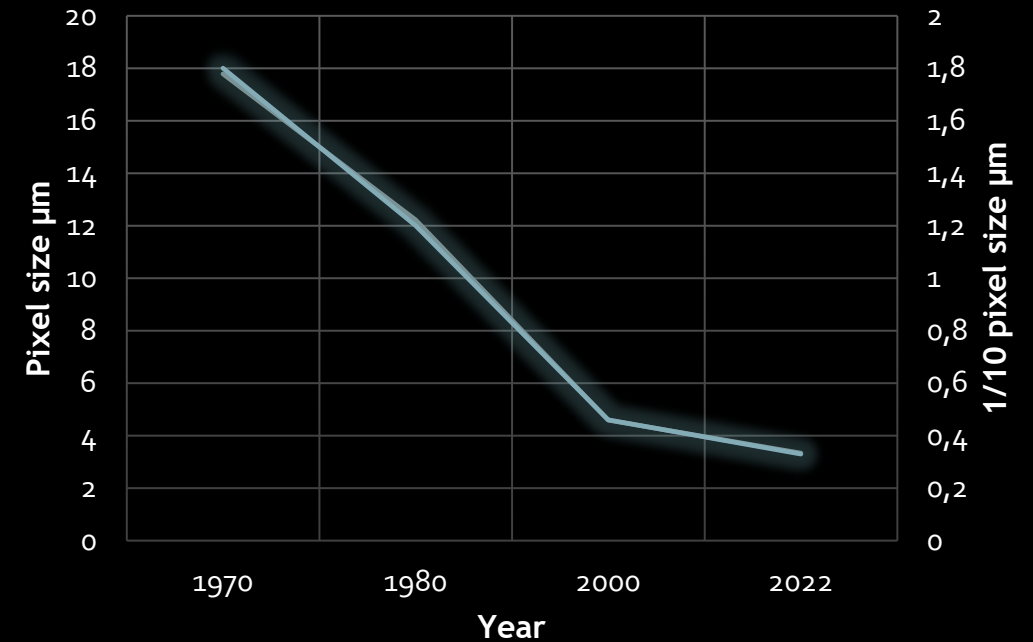
Today challenge using prism technology?

- Advanced Production technology
- Pixel are getting smaller
- Requires experience, quality control and unique production technology
- Finished Model B: Prism block, C-mount and smart sensors



Target Accuracy of sensor position

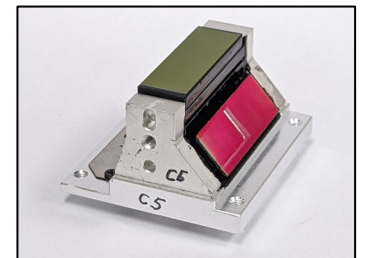
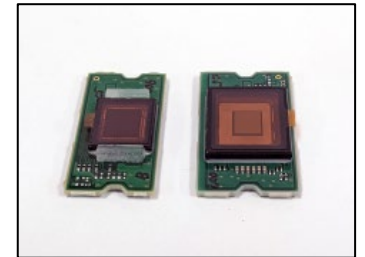
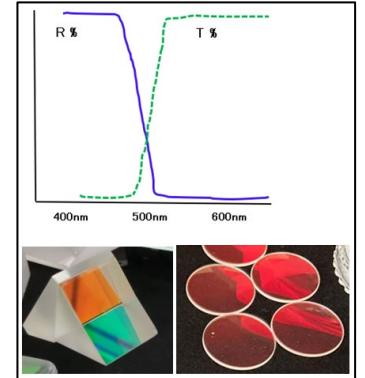
Before: 0,35 μ m
After: 0,28 μ m



Summary



- Bandwidth control
 - 2 or 3 wide or small custom spectrums
- Less energy of light
 - Using dichroic filters and area sensors needs less energy of light
- Selectable smart sensors
 - Visible, NIR, SWIR, POL, TOF
- Transmitted light picture and reflected light picture in one timely synchronized moment
 - Absorbing vs surface wavelength

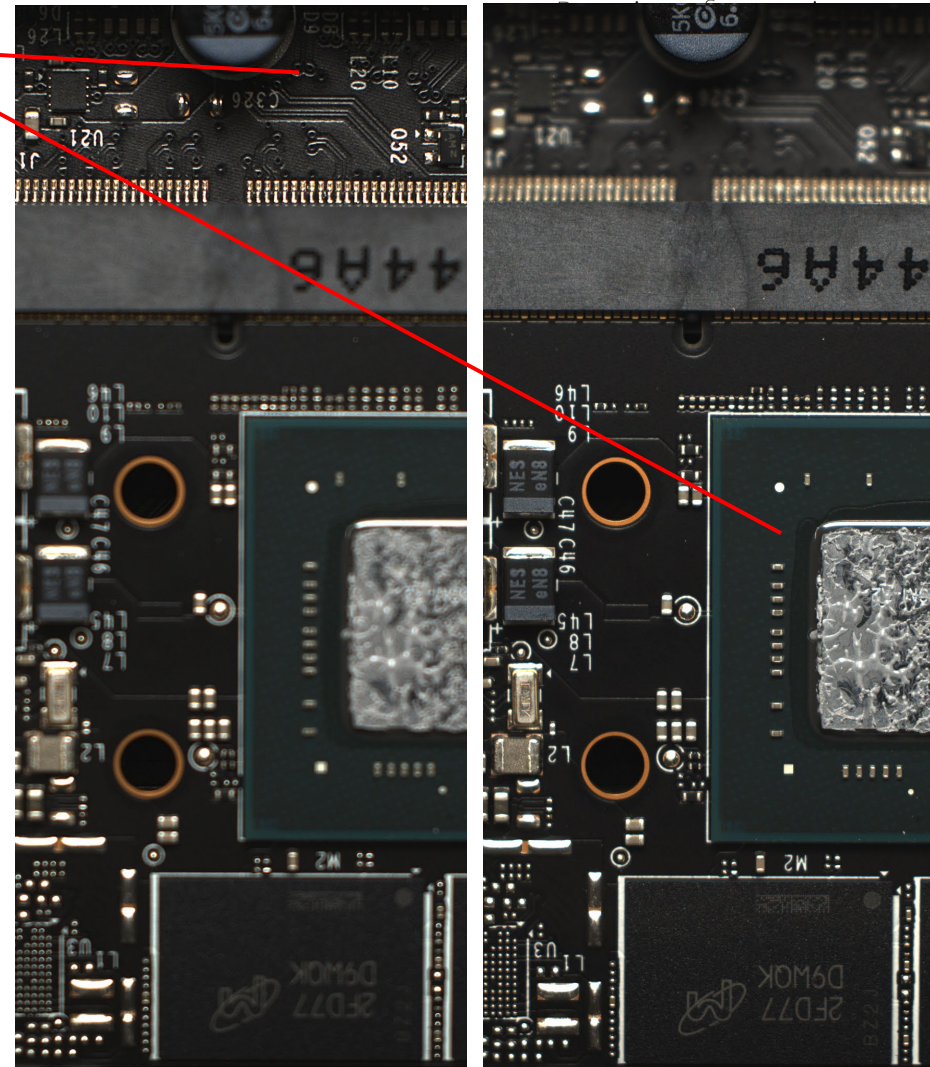
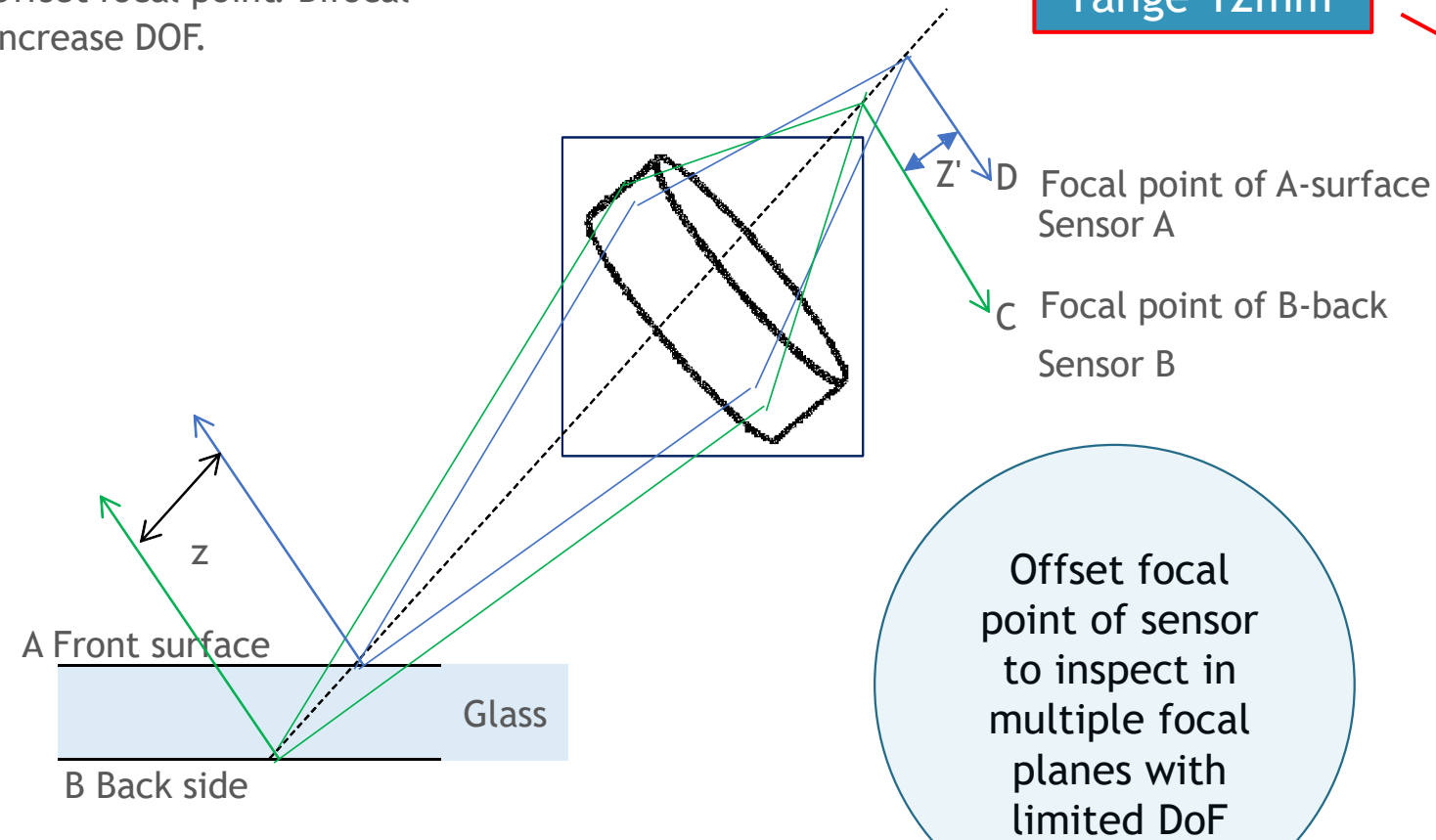


APPLICATION 6 - Bi Focal

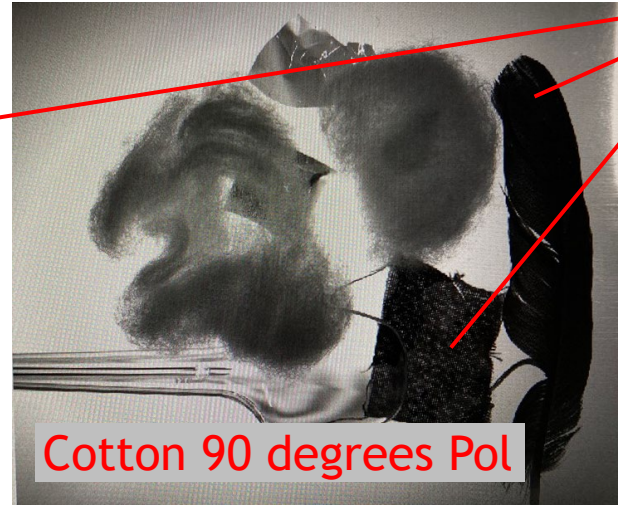
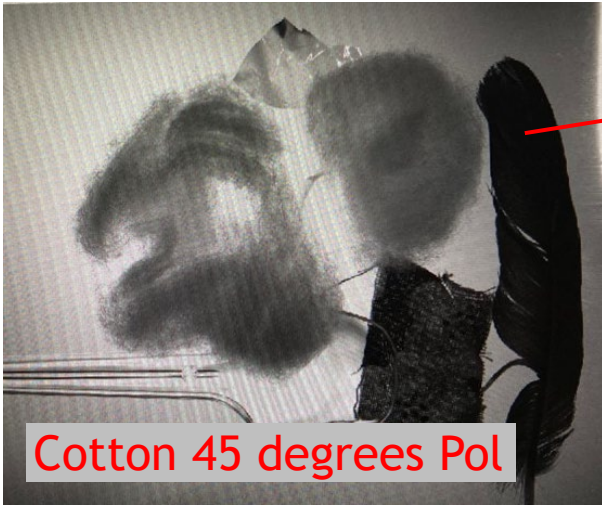


Offset focal point: Bifocal
Increase DOF.

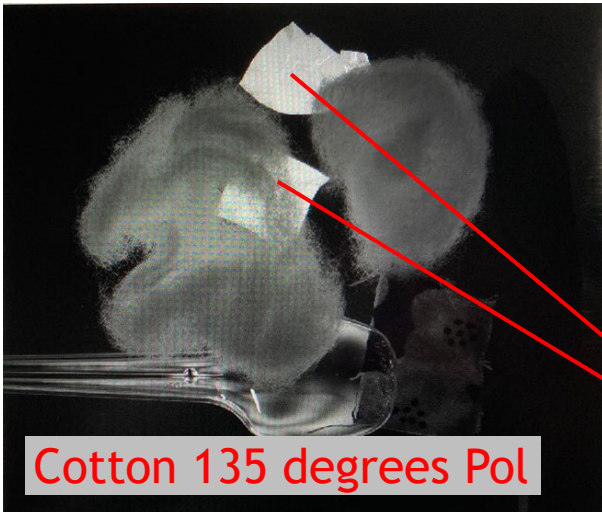
In focus
range 12mm



Use case Model 10



Detecting feathers and paper

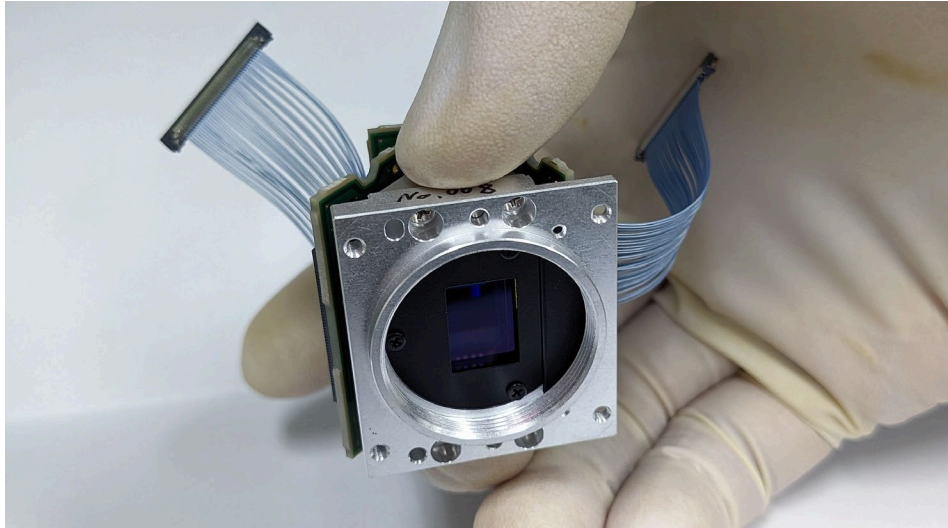


Using the co-site data streams: 0, 45, 90 and 135 degrees + RGB information results in accurate sorting of the cotton

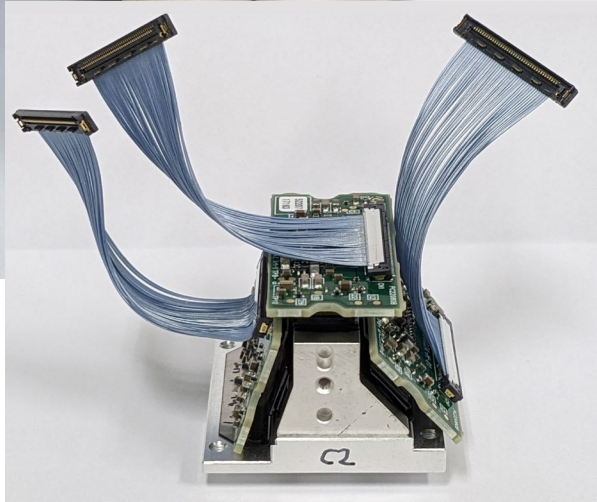
Detecting transparent plastic



Product Line



Model B

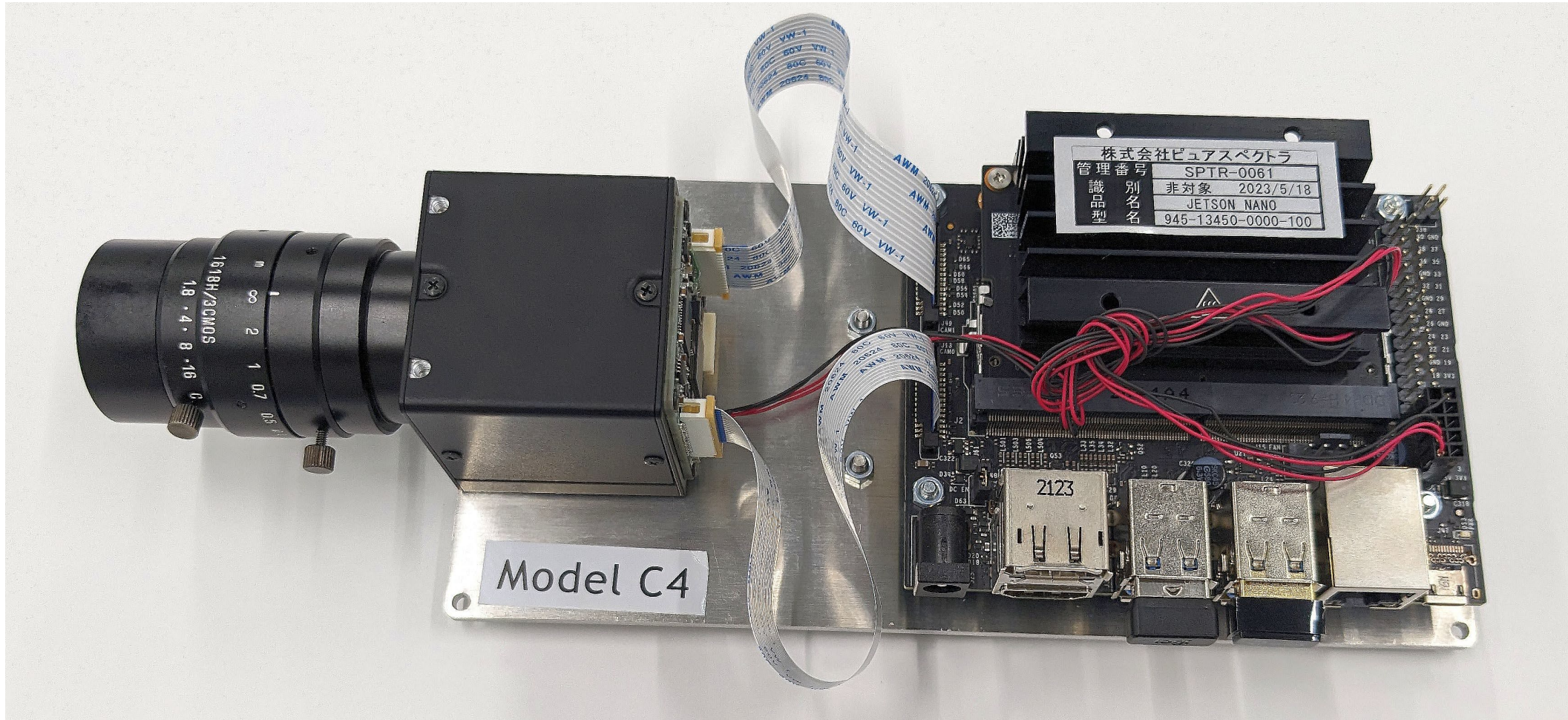


Evaluation Kits with Jetson Nano, Ubuntu 18.02



PURE SPECTRA

Passion for prisms



Take aways:

1. Thinking outside the box with prism clusters can help (you)
2. Prism cluster is not RGB only
3. Wavelengths of rays doesn't improve using electronics and software
4. Short WD is a pixel fusion challenge
5. Bi-focal example and benefits compared to newer technologies
6. Polarization and RGB in one optical path is beneficial for cross correlation
7. In sorting, cross correlation can help expel small transparent objects from a white and chaotic background



PURE SPECTRA

Passion for prisms

Improvement dynamic range and simultaneous imaging
of absorption and reflection wavelengths