METAPHASE LIGHTING TECHNOLOGIES

Considerations for Choosing Best Imaging Wavelength

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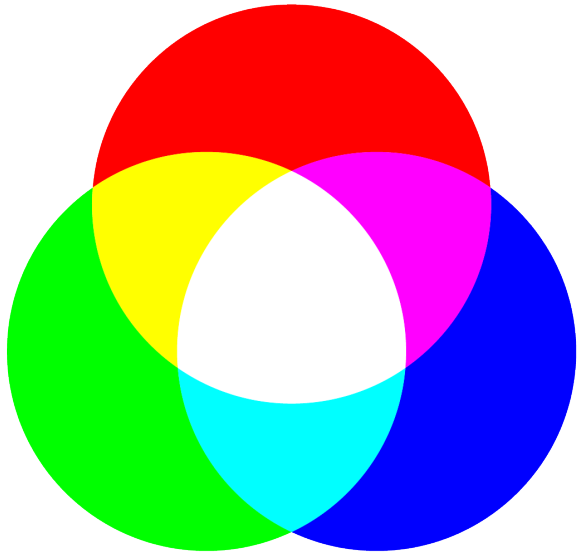
LIGHT

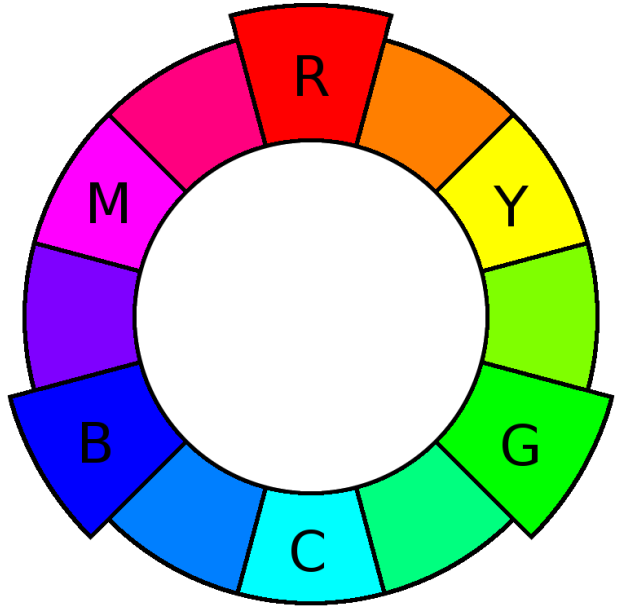
Light is a small part of the electromagnetic spectrum and exists in tiny energy packets called photons

100nm-395nm

400nm-740nm

750nm-2500nm





Considerations

- Garbage In Garbage Out
- Goal in imaging/illuminating a part under inspection is to make the image as binary as possible
- Camera Lensing & uniformity of the captured image.
- Safety. Some wavelengths require eye/skin protection.

Part Segmentation using different Color (wavelengths) LED Lights

White LED

470nm

535nm

660nm

White LED

470nm

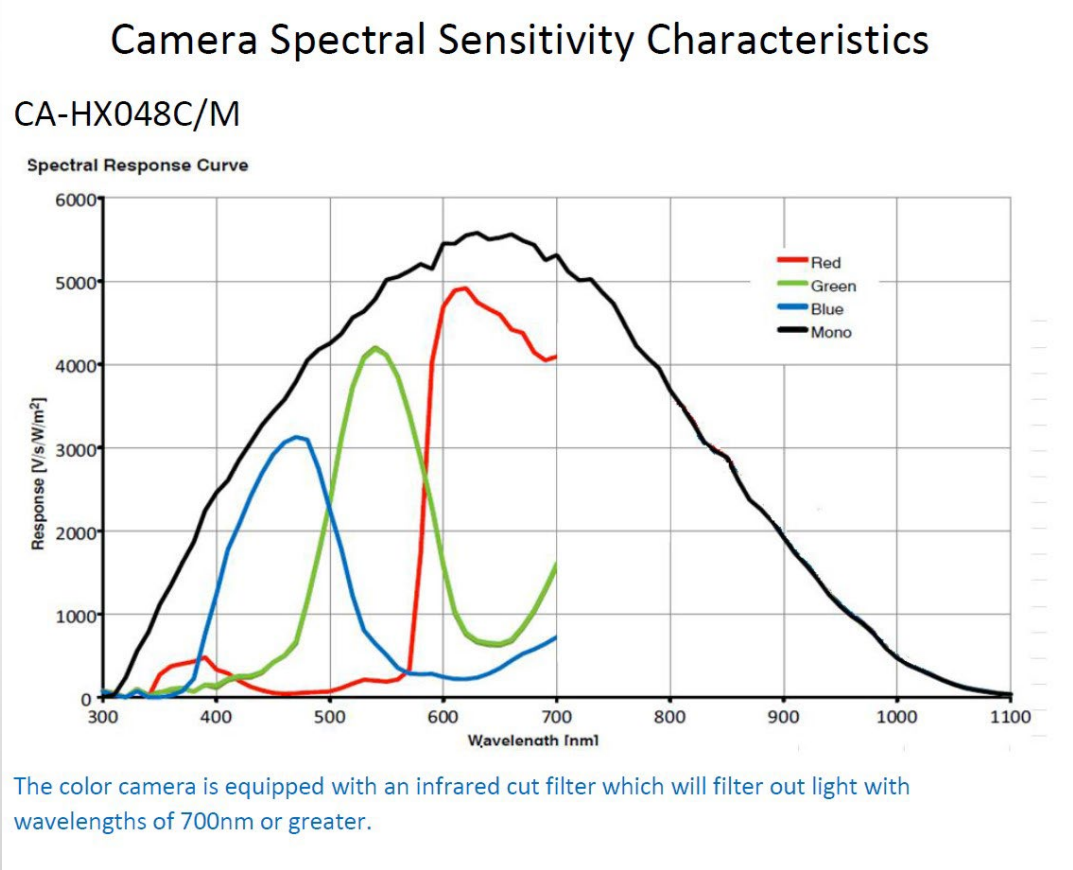
535nm

660nm

COLOR VS. MONOCHROME

WAVELENGTH SELECTION:

- UV: 300-400NM
- COLOR: 400-700NM
- MONOCHROME: 350-1000NM
- SWIR: 1000-1700NM

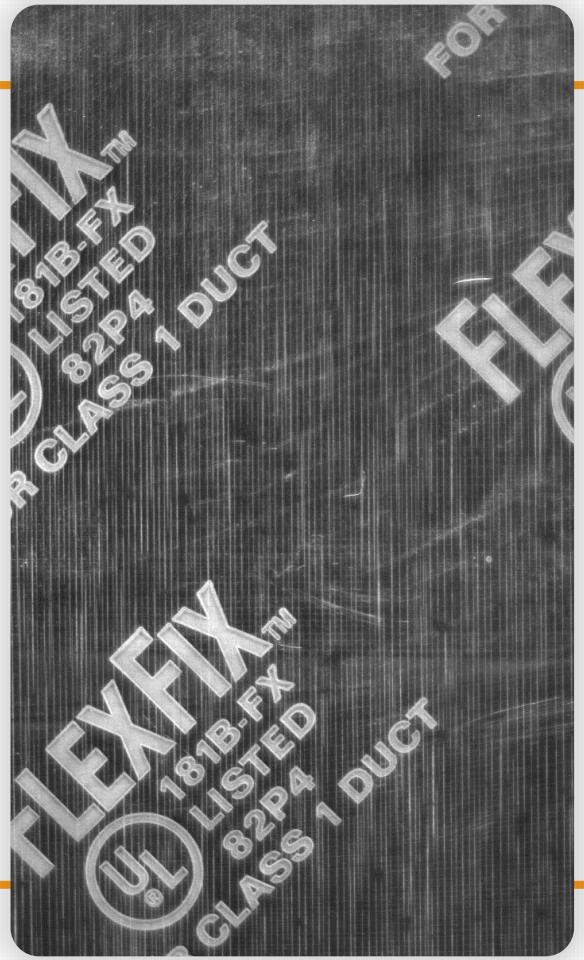


The color camera is equipped with an infrared cut filter which will filter out light with wavelengths of 700nm or greater.

FlexFix Aluminum Tape

Original

535nm



630nm

Polarized

White front light: Color

UV 365nm: Front Light

Conclusion

- Maximize contrast
- “Lights, Camera, Action”
- Camera spectral sensitivity
- Safety

METAPHASE
LIGHTING TECHNOLOGIES

For further information please contact us

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Credits

- Edmund Optics
- Specim
- Xenics
- Teledyne Dalsa

Fluorescing UV Application

White Illumination

UV 365-395nm

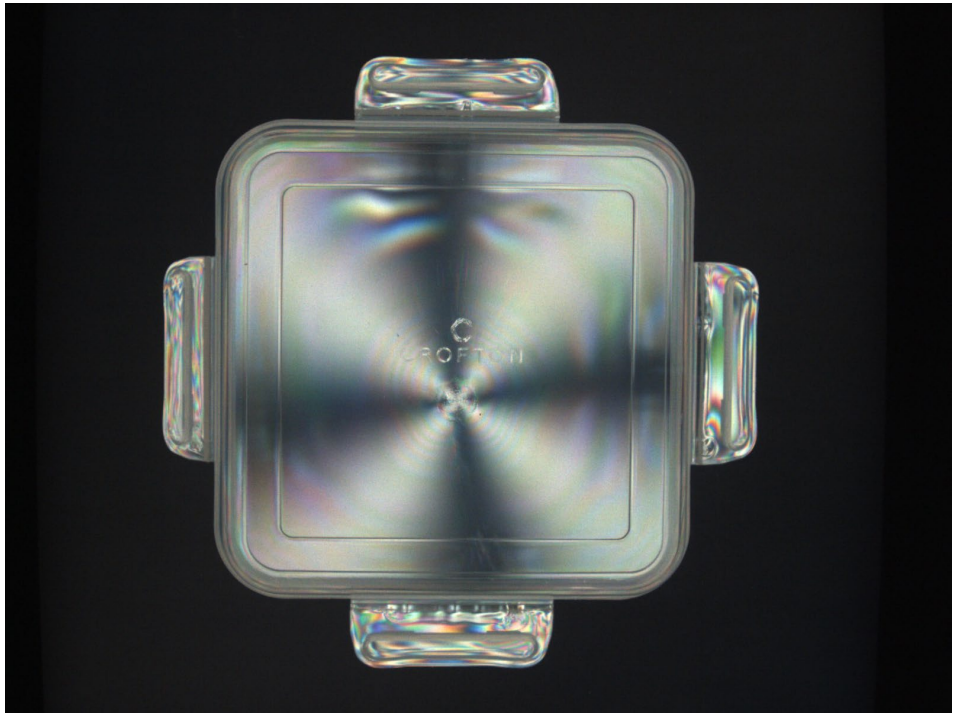
Polarized Vs non polarized

Polarized

Non-Polarized

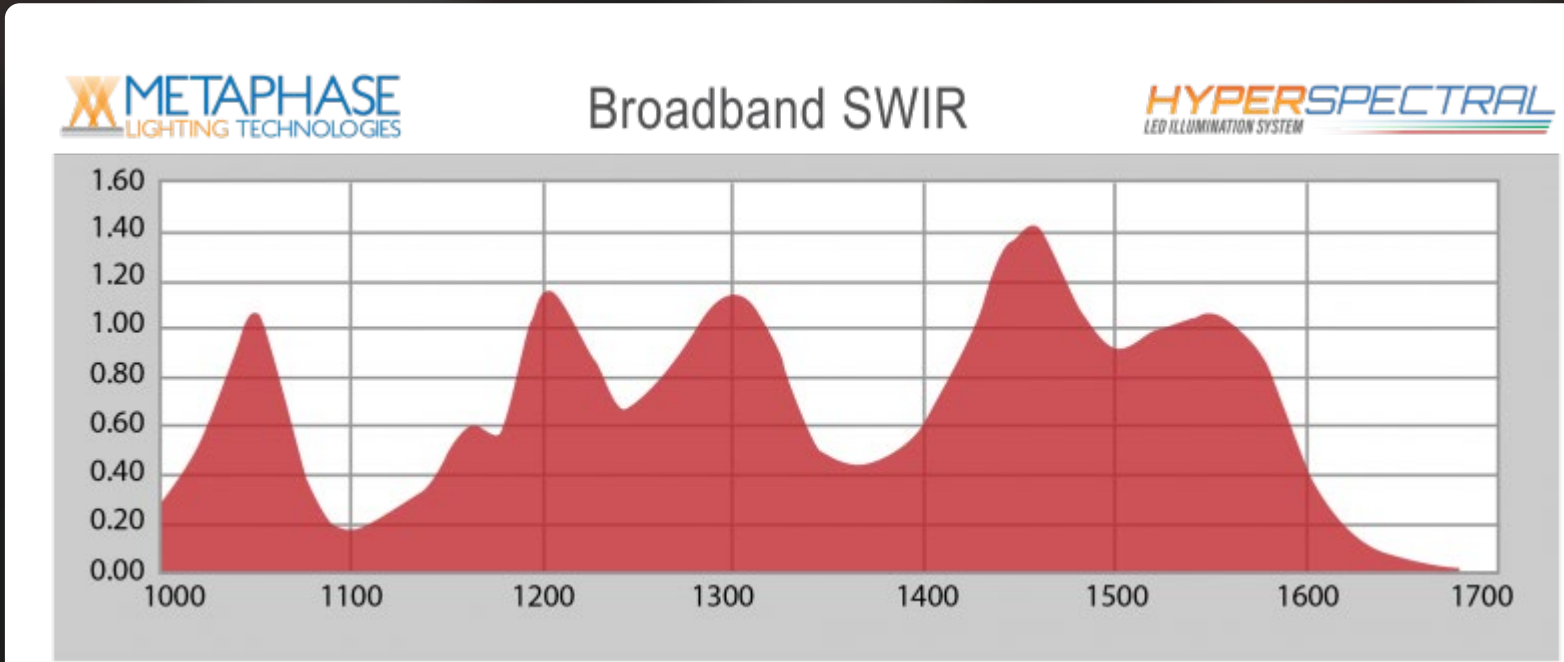
Polarized Vs non polarized

Polarized



Non-Polarized

SWIR


METAPHASE
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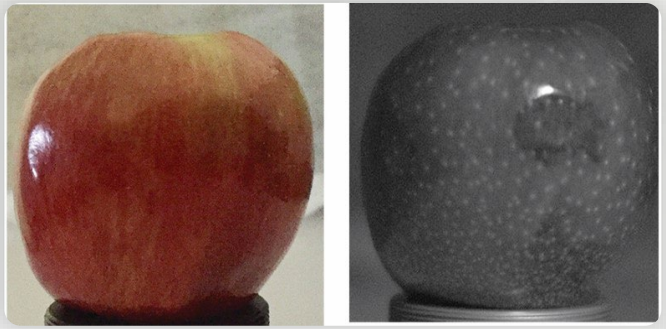
Broadband SWIR
HYPERSPECTRAL
LED ILLUMINATION SYSTEM
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
1000
1100
1200
1300
1400
1500
1600
1700

SWIR Imaging

Produce and Fill Level

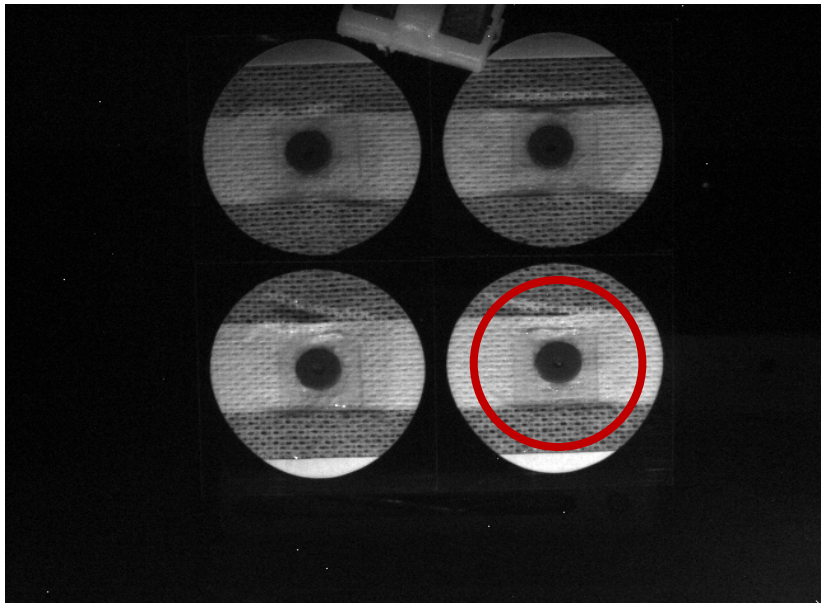


Produce

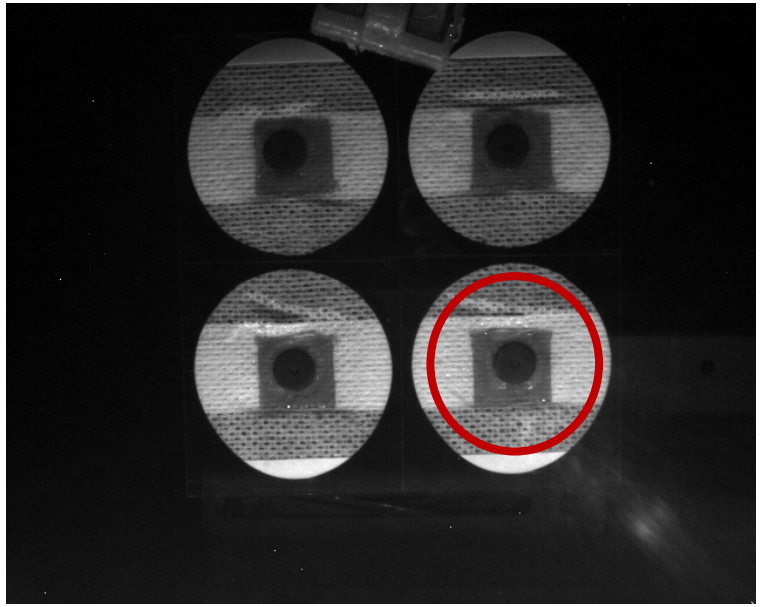
Currency

SWIR imaging

Glue Absorption



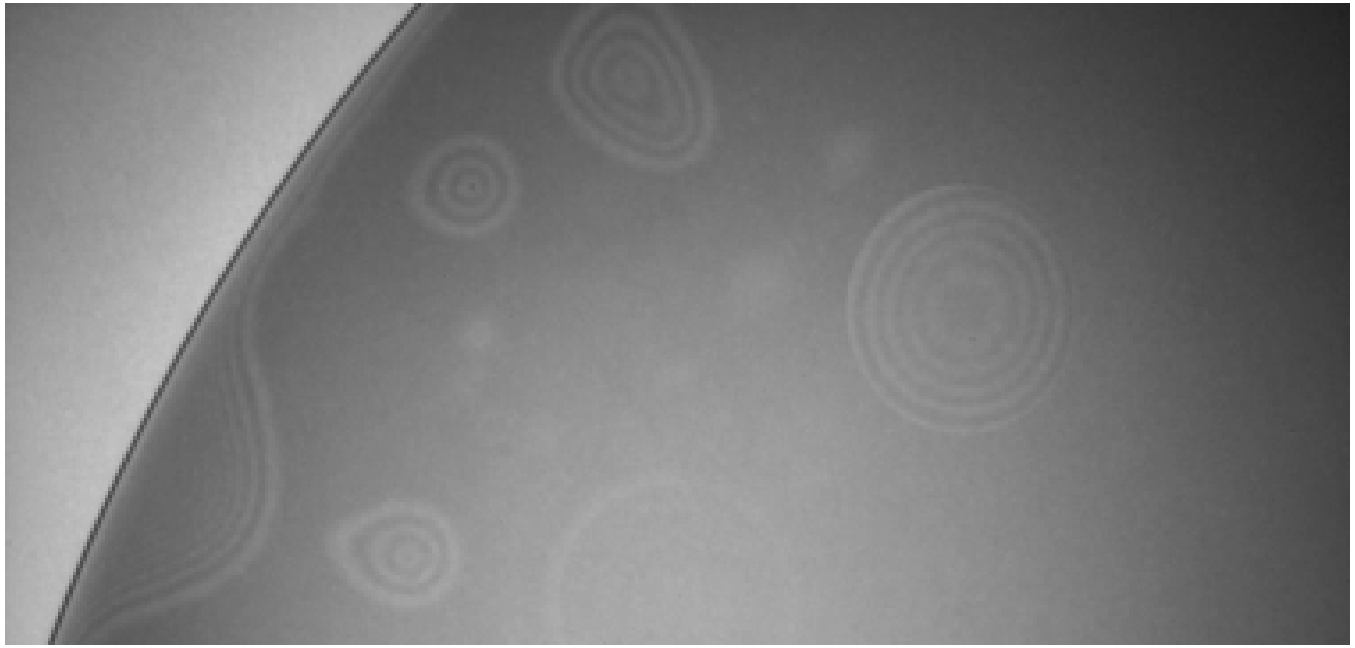
1050nm



1450nm

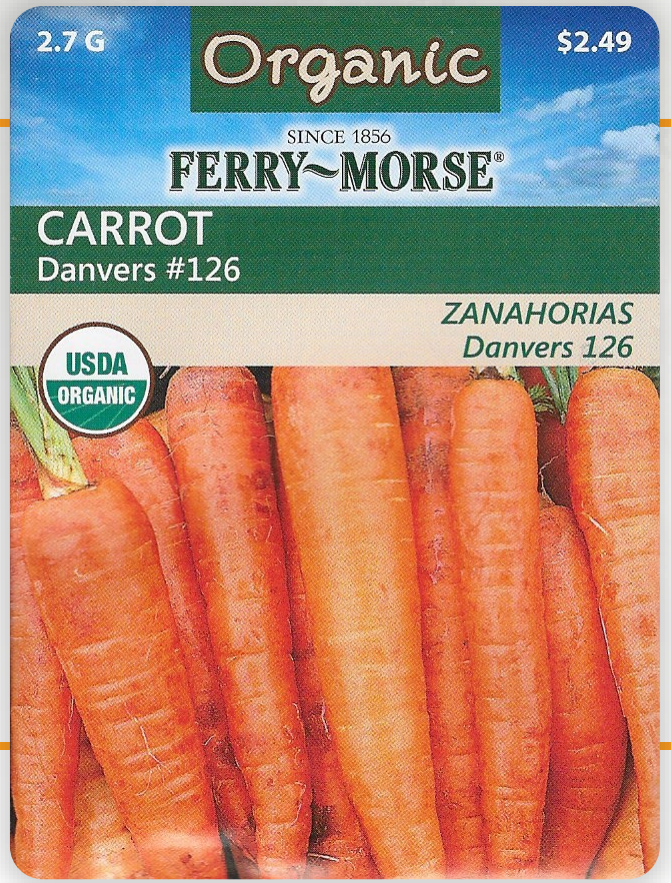
SWIR Imaging

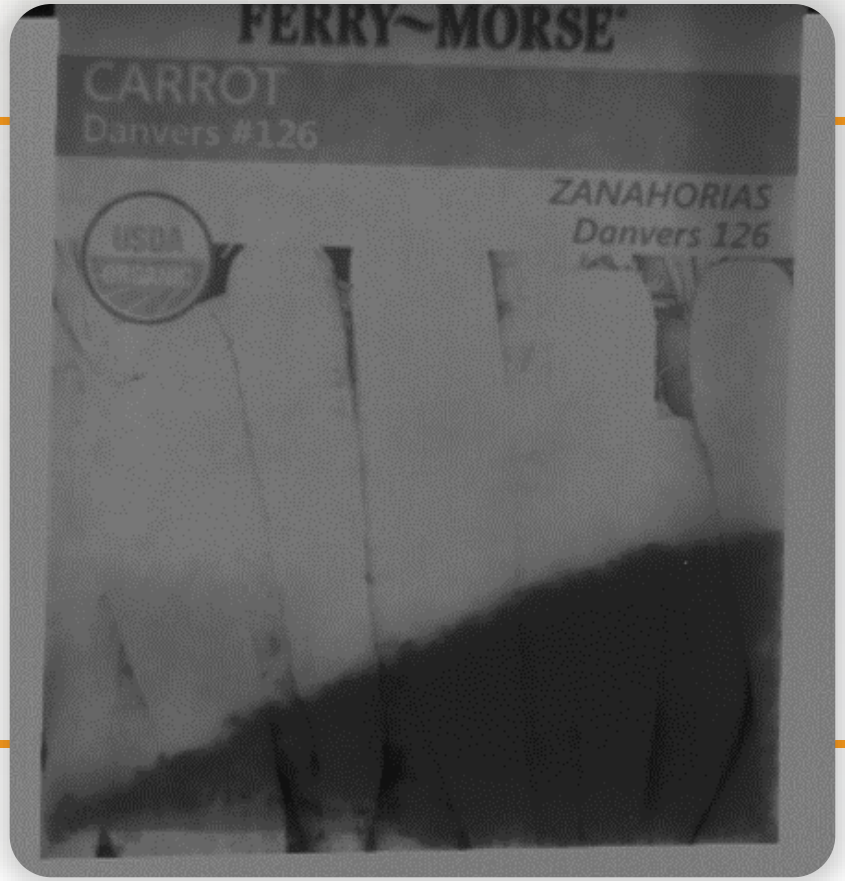
Wafer Inspection



SWIR imaging

Fill Level Seed Bag





HYPERSPECTRAL APPLICATIONS

- Plastic Recycling soring of the different types of plastics (HDPE, LDPE, PVC, PET, ETC.)