proxitronic detector systems

Agenda

Szintillation screen variations

- Applications (vacuum and non vacuum)
- Production technique (several)
- Emission Wavelength
- Sedimentation requirements
- Coupling Efficiency (to sensors)
- Transmission match (fiber Optic plates)
- Screen variations
- Manufacturing impressions
- Imaging Systems possible
- Summary
- Finale

Screens

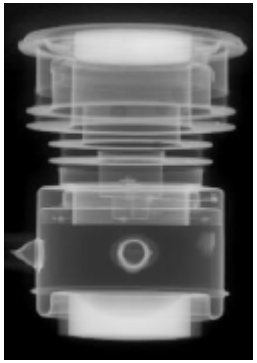
Vacuum

Image Intensifier
MCP Detector
Beam Imaging

Image Intensifier Diodes PROXIFIER® and MCP Image Intensifiers MCP-PROXIFIER®

Normal Pressure

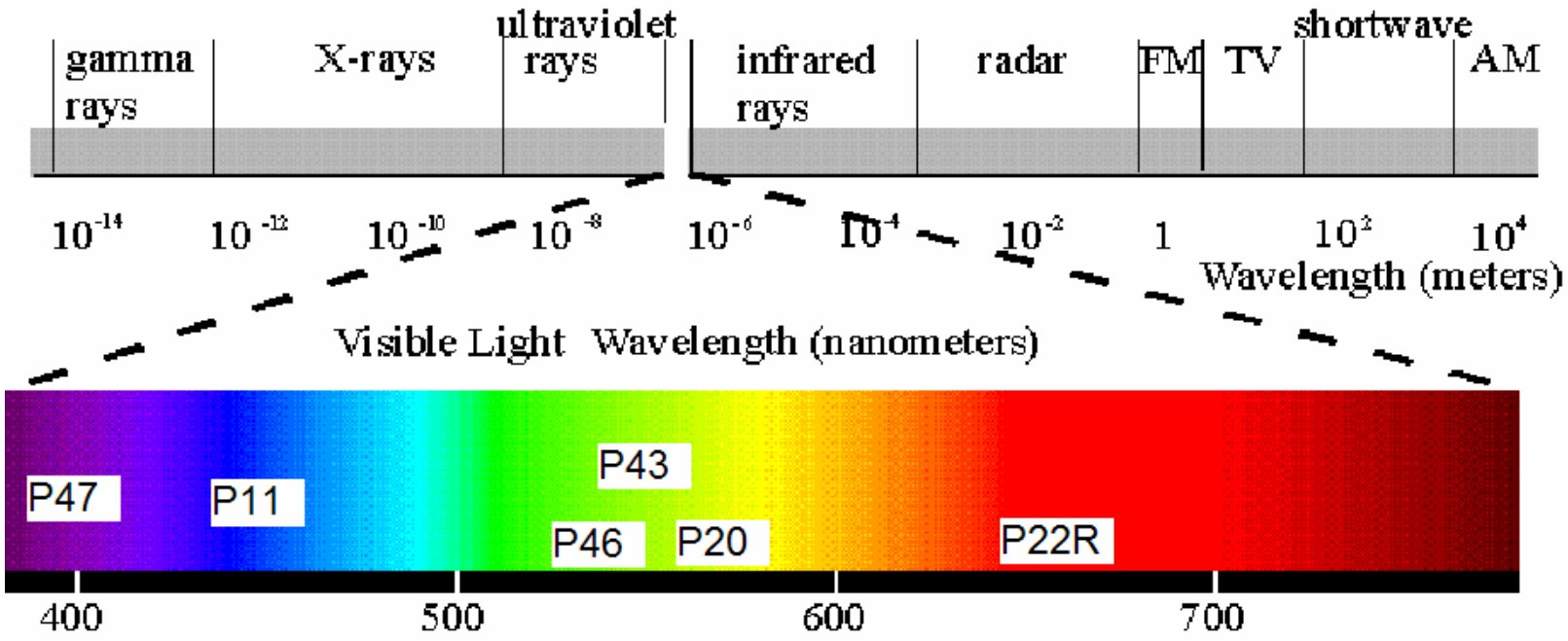
CCD Detectors
X-Ray screens
Neutron Tomography
Security Systems



Production Techniques

- Gravity Seddling (only on flat surfaces)
- Brushing (possible on non flat substrates)
- Evaporation/Sputtering (loss of donators)
- Pulsed Laser Deposition
- Electrophoretic (high density screens, conductivity surfaces needed)
- Spraying (big proportion of laquer, not for UHV applications)
- Printing
- Extrusion in foile (x-ray screens, not for UHV applications)
- others

Light emission (400~800 nm)



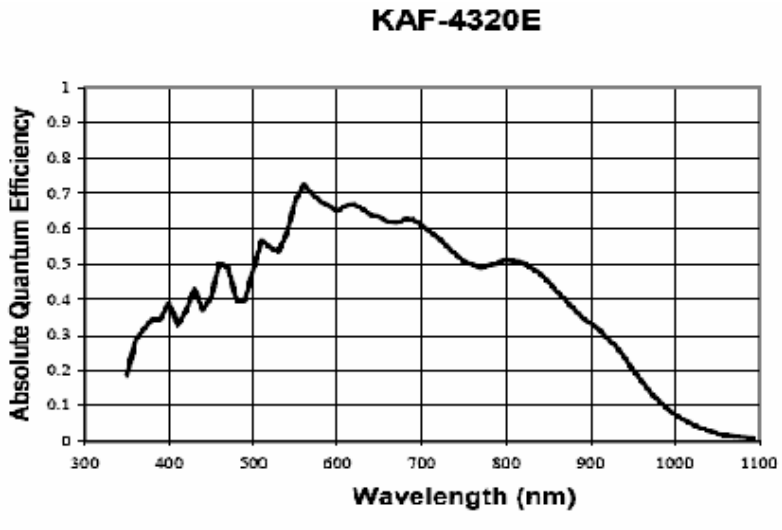
Only on flat surfaces

- All glass substrates, plates, prisms, tapers
- Aluminium
- Copper
- Metall Foiles (Aluminium, Gold, Platin)
- Metallised foiles (Mylar)
- But not on plastic surfaces (bad addherence)

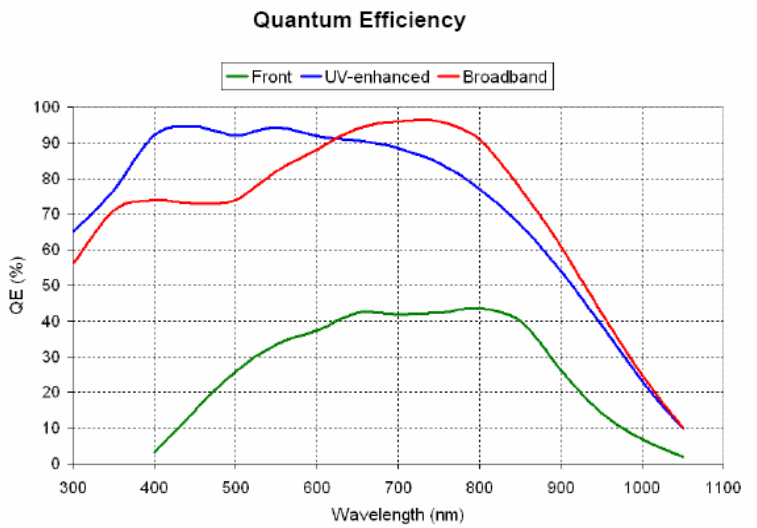
proxitronic detector systems

Coupling efficiency

Kodak Sensor

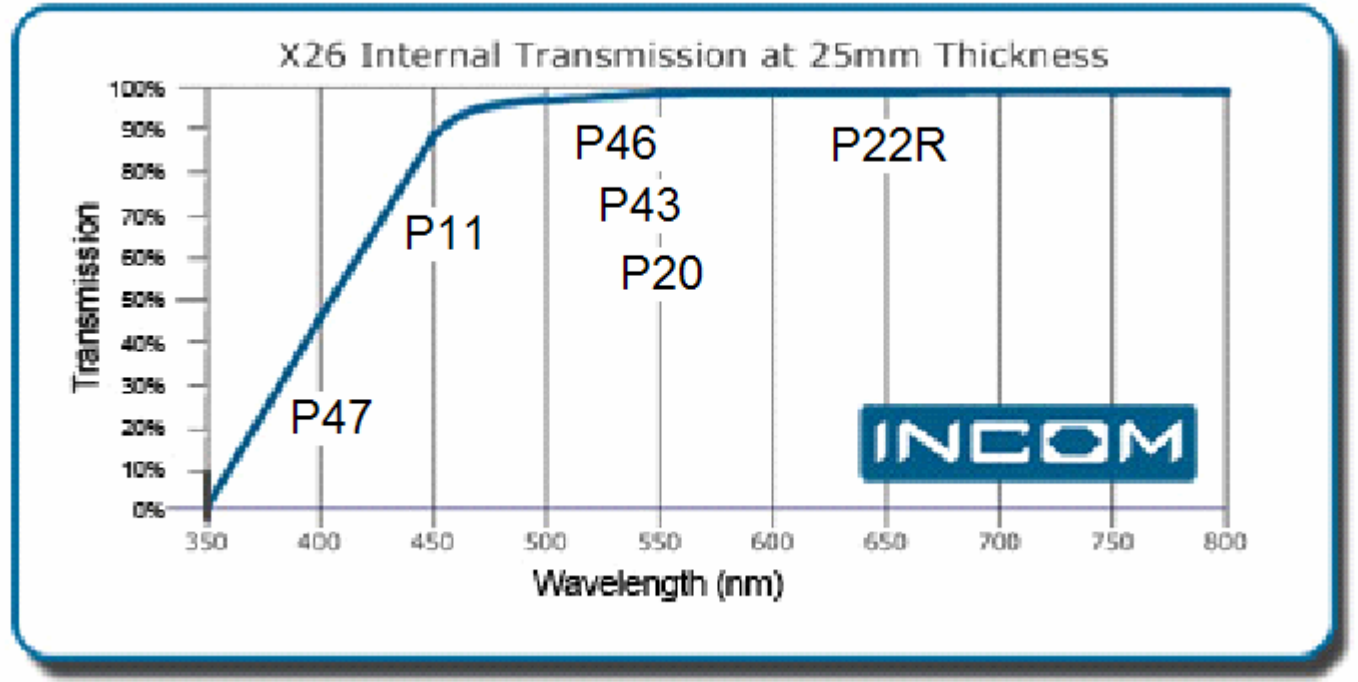


Fairchild Sensor CCD 486



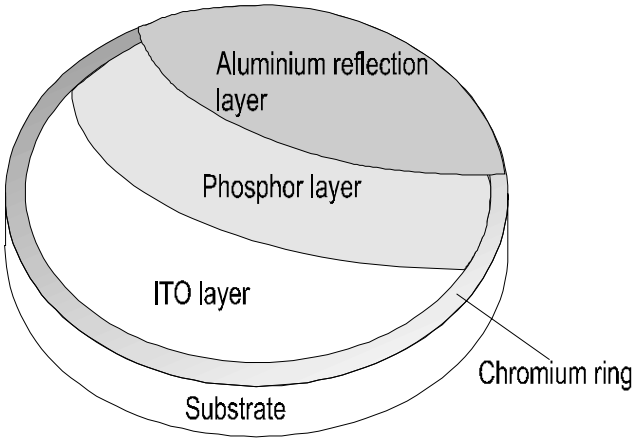
Phosphor emisson wavelength should match to sensor

Transmission curve in a fiberoptic plate or taper



Phosphor should match to coupling method

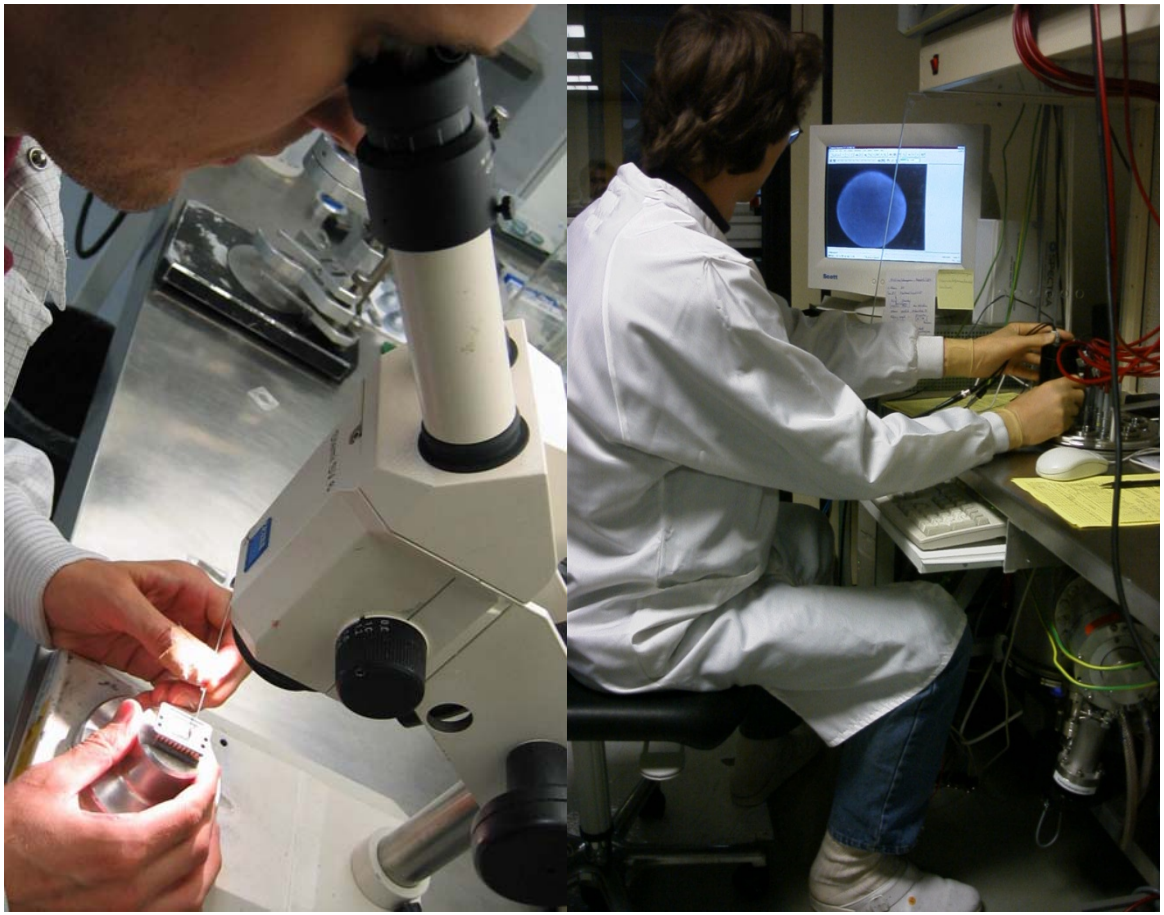
Screen Variations

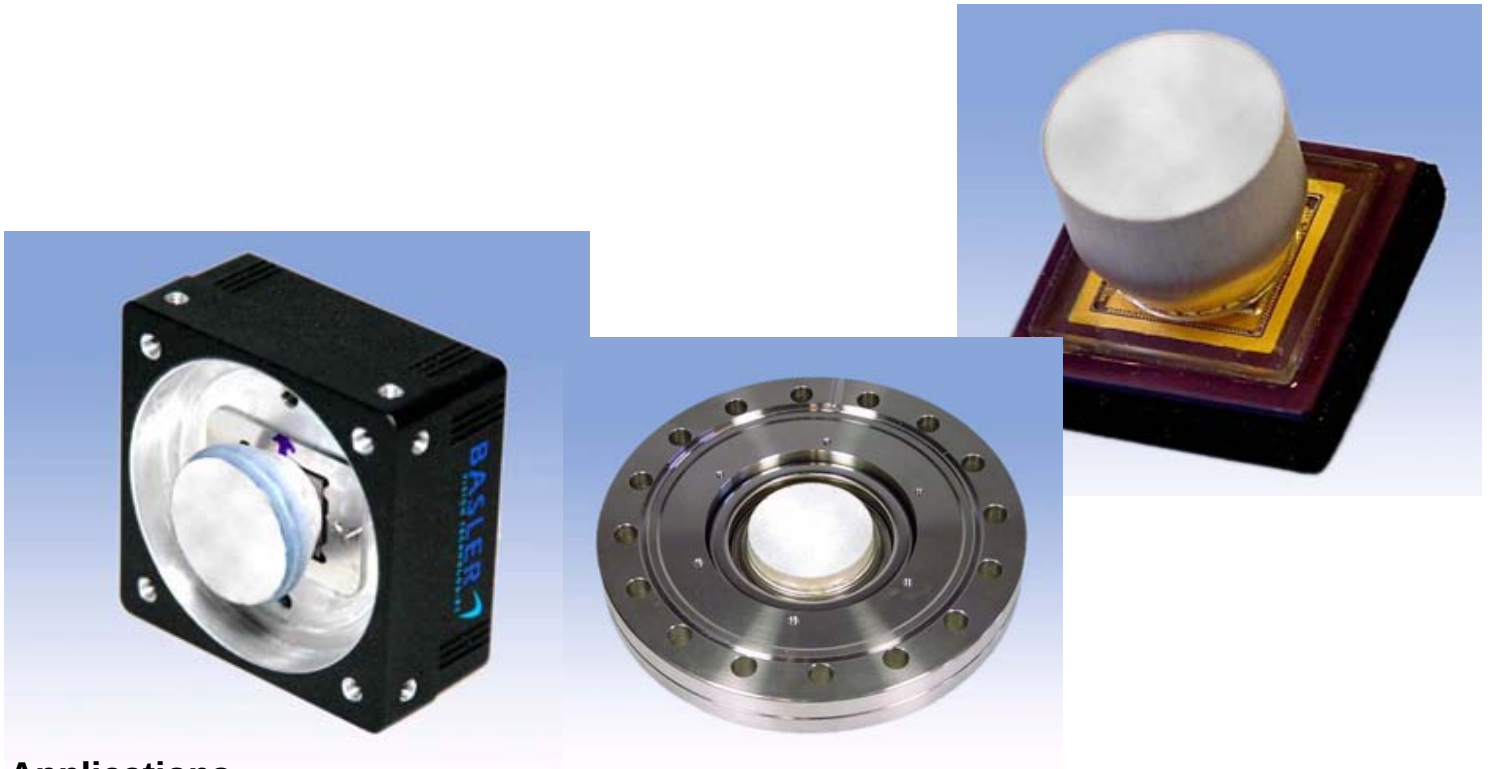


•	Screen Thickness	3µm to 150µm
•	Screen Diameter	2mm to 200 mm
•	ITO	Conductive Underlay Oxidation Process at 400°C Size limit = 75 mm
•	Chromium	Contact ring avoid bad contact to ITO layer to achieve stable light output Size limit = 75 mm
•	Aluminium	Conductive overcoating, discimination of light from partices, reflect light emission in foreward direction increase of efficiency Size limit = 190 mm
•	Two or three step Aluminium	reduce light pass through the foile
•	Black overcoating	reduce reflexion of light back to vacuum system
•	Temp. Cycles	reduce outgassing of the screen under UHV conditions

proxitronic detector systems

Manufacturing Impressions





Applications:

- Detection of UV-, X-ray and particles
- Beam intensity measurement
- Beam profile measurement

Summary

Proxitronic Screens

- Good Results in UHV Applications
  -vacuum preprocessing
  -multi step coating of metallisation layers
- Resolution up to 125 lp/mm
  -grainsize adapted to screen thickness
- Efficiency up to 600 Photons/10 keV electron
  -lowest possible binder content, but fragile screens
- Standard P43/P46 screens offered
- Standards fit to 18, 25, 40 mm MCP´s
- Custom specific screens fit exactly to your needs
  -size
  -Phosphor type, emission coulour, decaytime
  -thickness and required resolution

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