



**ZECOTEK**

# EXCELLENCE IN IMAGING

**ZECOTEK**

- ▶ LFS Scintillation Crystals
- ▶ LFS Arrays
- ▶ MAPD Solid State Photo-detectors



## LFS SCINTILLATION CRYSTALS

Zecotek's LFS scintillation crystals are distinguished by their combined high light yields and ultra-fast decay constant, covering a wide range of emission wavelengths, that set them apart from other industry contenders.

**“FAST DECAY TIME AND COMPETITIVE PRICING, ZECOTEK OFFERS AN IDEAL SOLUTION.”**

The LFS superlative light yield (80-85% -NaI scale) and ultra-fast decay constants (33-36 ns) set them apart from other industry contenders. The superior radiation hardness of our LFS crystals also make them ideally suited for many types of high-energy physics experiments and other applications associated with high levels of ionising radiation.

for more detailed information, white papers and to request samples or place an order be sure to visit us online.

[www.zecotek.com](http://www.zecotek.com)

[info@zecotek.com](mailto:info@zecotek.com)

### SPECIFICATIONS

### VALUE

Density (g/m <sup>3</sup> )	<b>7.35</b>
Effective Atomic Number	<b>64</b>
Attenuation Length (cm)	<b>1.15</b>
Decay Constant (ns)	<b>33-36</b>
Maximum Emission (nm)	<b>425</b>
Light Yield (ph/MeV)	<b>37K-38K</b>
Refractive Index	<b>1.81</b>
Energy Resolution 137 Cs (%)	<b>8</b>
Radiation Hardness (rad)	<b>&gt;10<sup>6</sup></b>
Hygroscopicity	<b>No</b>
Hardness (Mohs)	<b>5.8</b>
Cleavage	<b>None</b>

## WHAT MAKES OUR ARRAYS DIFFERENT?

Traditionally arrays are assembled by hand. Fabricated from individual elements, wrapped and organized one at a time into a matrix of desired dimensions, this technique is costly, time consuming and leaves large margins for error and misalignment.

One of the keys to achieving higher resolution and in general more accurate and precise results from your imaging setup is correct matching of array to detector. With our specialized automated process, arrays can now be assembled robotically with greater accuracy, repeatability and uniformity.

Our arrays are produced in a fraction of the time required by traditional processes, are more cost effective and have better detector matching characteristics. Zecotek invites you to experience improved turn around time, lower cost and higher accuracy with our unique LFS scintillation crystal arrays..



AUTOMATED  
PROCESS



QUICK TURN  
AROUND



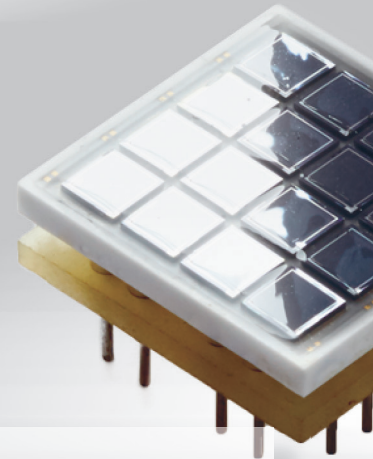
ACCURATE RESULTS  
UNIFORM ARRAYS



# THE NEW WAVE IN SOLID STATE DETECTORS

## MICRO-PIXEL AVALANCHE PHOTO DIODES (MAPD)

Zecotek's detectors incorporate our break-through technology that dramatically improves linearity and allows for very tight timing resolution by providing fast pulse rise time and low jitter. Together with our new scintillation material LFS, Zecotek's photo-detectors provide a powerful platform for medical imaging applications relying on gamma-ray detection, such as PET scanning, offering significant benefits to the industry.



Parameter	Unit	MAPD		MAPT	
Effective Photosensitive Area	mm <sup>2</sup>	3x3	3x3	3.7x3.7	3x3
Pixel Density	pix/mm <sup>2</sup>	1600	5000	10,000	400
Number of Pixels	pix/device	14,400	45,000	136,900	3600
Package	-	Met / Cer	Met / Cer	Met / Cer	Met / Cer
Window Material	-	Epoxy	Epoxy	Epoxy	Epoxy

### electrical & optical characteristics (T=25 °C, V=V<sub>op</sub>)

Spectral response range	nm	320-900	320-900	320-900	320-900
Peak sensitivity wavelength	nm	450	450	450	450
Photon detection efficiency	%	65	55	45	40
Dark Count	kcps	Max 1500	Max 1500	Max 1500	Max 1500
Crosstalk Probability	%	Max 10	Max 10	Max 10	Max 10
Terminal Capacitance	pF	120	140	180	Max 10
Gain	-	1.7 x 10 <sup>6</sup>	7 x 10 <sup>5</sup>	2 x 10 <sup>5</sup>	1 x 10 <sup>7</sup>
Breakdown Voltage	V	70	70	70	40

## ABOUT ZECOTEK

Zecotek Photonics Inc. (TSX-V: ZMS; Frankfurt: W11) is a photonics technology company commercializing high-performance scintillation crystals, photo detectors, positron emission tomography scanning technologies, 3D auto-stereoscopic displays, 3D printers and associated materials for applications in medical, high-tech and industrial sectors.

Founded in 2004, Zecotek operates three divisions: Imaging Systems, 3D Technology Systems, and Optronics with labs located in Canada, Korea, Russia, Singapore and U.S.A. Our strategic alliances and joint ventures include leading industry partners such as Hamamatsu Photonics (Japan), the European Organization for Nuclear Research (Switzerland), the University of Washington (United States), Beijing Opto-Electronics Technology Co. Ltd. (China), NuCare Medical Systems (South Korea), and National NanoFab Center (South Korea).

## CONTACT

### ► North America

Zecotek Photonics Inc  
1120 - 21331 Gordon Way  
Richmond, BC,  
V6W 1J9

### ► Asia Pacific

Zecotek Photonics Singapore Pte Ltd  
21 Kallang Avenue, #03-177  
Singapore,

## CONNECT

► [www.zecotek.com](http://www.zecotek.com)

► [info@zecotek.com](mailto:info@zecotek.com)

