

**ZECOTEK**

IMAGING SYSTEMS LTD.

ZECOTEK SCINTILLATION CRYSTAL

# Applications of LFS



## Medical Imaging

- Our scintillator material is the best in the world for PET/CT scanners. We are currently supplying the worlds top medical imaging integrators.
- The greatest demand are North America and China with high demand due to increasing incidences in cancer.
- Healthcare industry are driving market growth

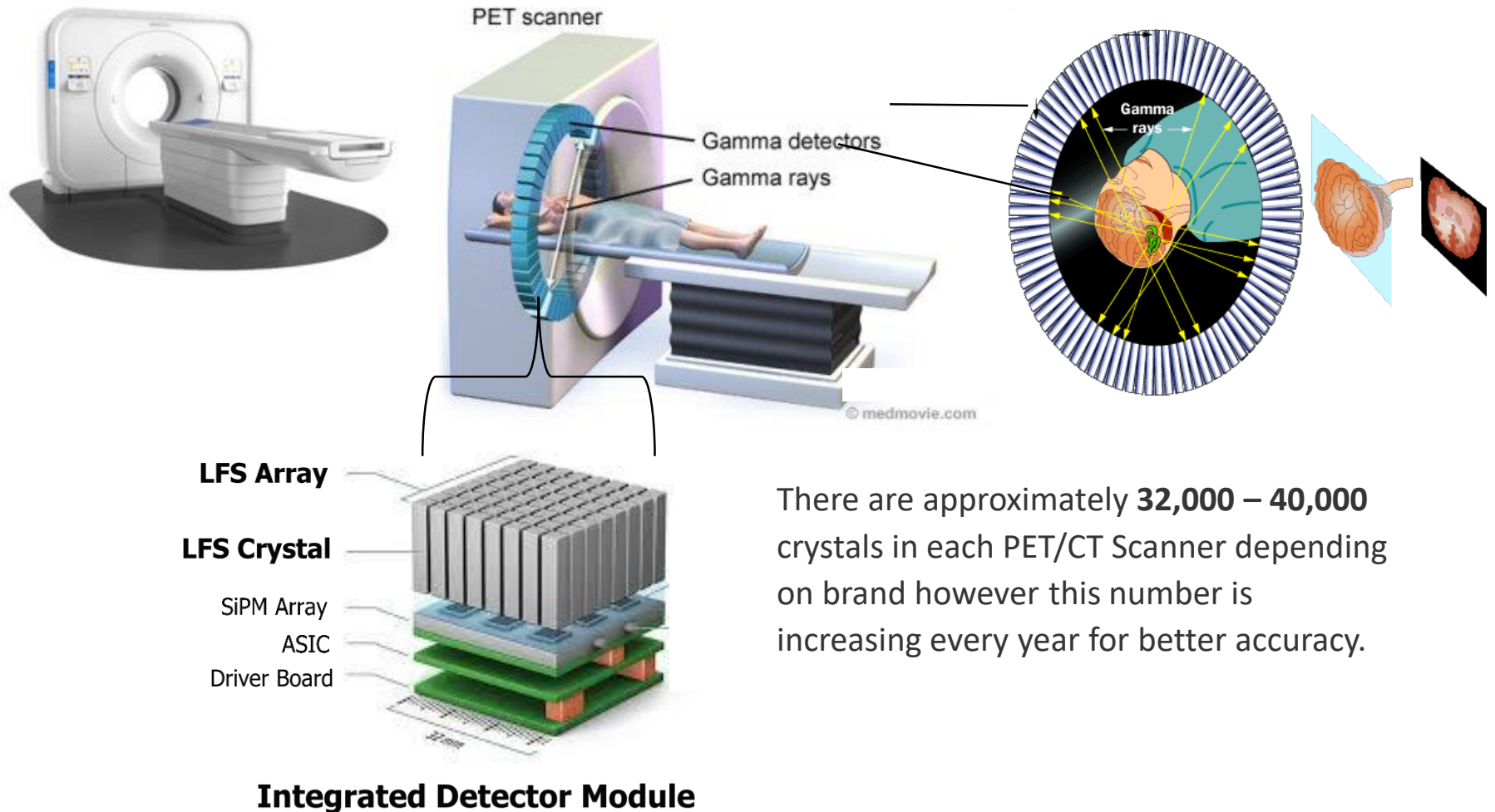


## Radiation Detection

The growth of the overall radiation safety market can be attributed to

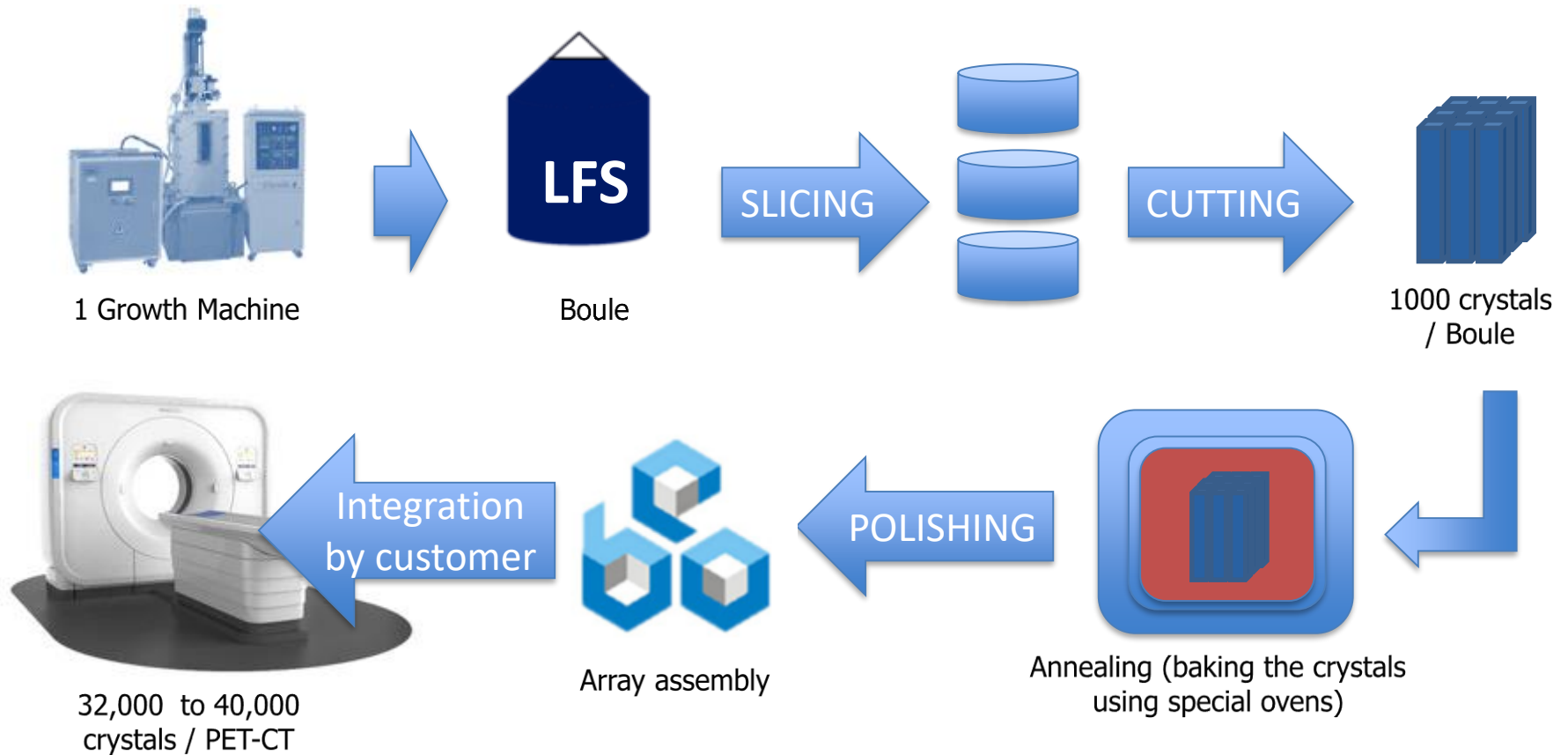
- Growing safety concerns post the Fukushima disaster
- Technological advancements, growing security threats
- Security budgets of global sporting/mega events
- Growing threat of nuclear terrorism.

# Medical LFS



There are approximately **32,000 – 40,000** crystals in each PET/CT Scanner depending on brand however this number is increasing every year for better accuracy.

# Manufacturing LFS

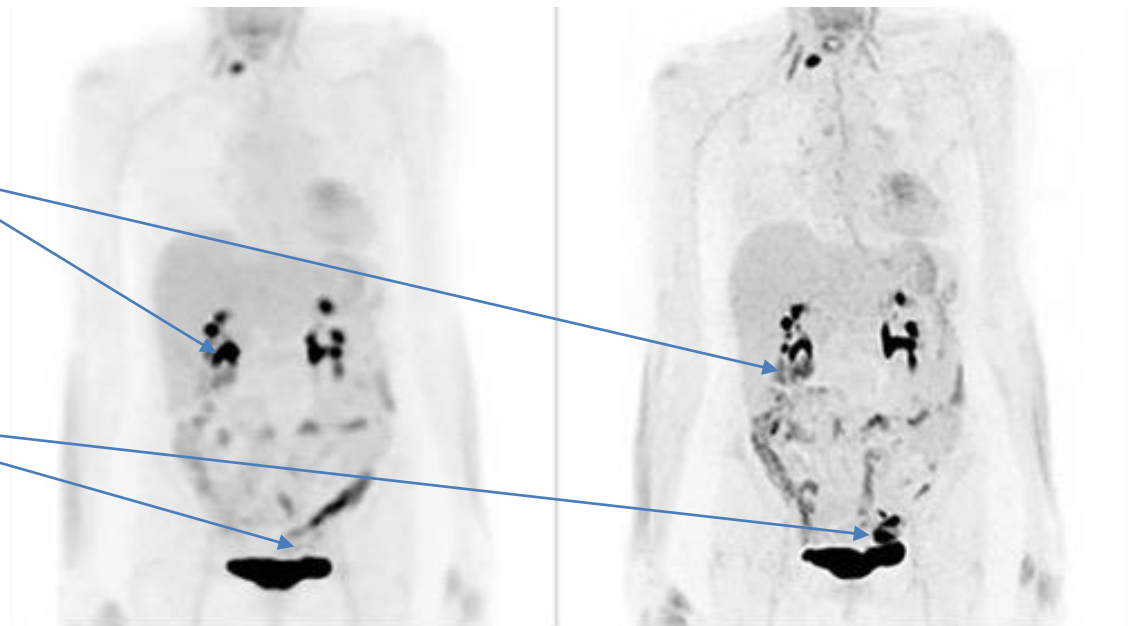


# LFS Superiority

Specifications	BGO	LYSO	LFS-3
Density	7.13	7.10	7.35
Decay Constant	300	41-44	33-36
Maximum Emission (nm)	480	428	425
Light Yield (relative to Na:Ti = 10%)	15-20	70-80	80-85
Energy Resolution 662 KeV(%)	12	9	8

Blurry image on the left  
Clearer image on the right

Faster, Brighter & Better  
resolution reveals more  
details for diagnostic,  
currently achievable  
only with LFS  
scintillation crystals.



# Testimonials

“[Our] test measurements show that Zecotek LFS crystal has consistently show better light yield than LYSO used currently. The coincidence timing resolution is also 50% better, coupled with a drastic reduction in afterglow recovery time than LYSO crystal. It is the best crystal for our PET scanner.

Top three medical equipment manufacturer  
Beijing, China

“Zecotek provides LFS crystals required for the CMS experiment as they had the necessary energy resolution and radiation hardness . In using the thin LFS crystal plates Dr. Cox and his team were able to reduce the technical and cost risks associated with measurements in such experiments.”

Professor Brad Cox  
Leader of the University of Virginia, CERN's Compact Muon Solenoid  
experiment., [University of Virginia](#)

“Zecotek provided Cherry labs with a selection of scintillation crystals from their patented LFS-3 range. After preliminary testing Cherry labs found the crystals to have the fastest decay constant they required, enhancing results for their depth-encoded PET detector designs. This combined with the competitive pricing Zecotek is able to offer made for an ideal solution.”

Dr. Simon Cherry  
Head of Cherry Labs - UC Davis, [Cherry Labs - UC Davis](#)

# Applications of LFS

## Radiation Detection

- With the increased threat of nuclear terrorism and nuclear incidents, protection and detection of nuclear material at points of entry and throughout ports is crucial
- Protection of critical infrastructure from dirty bombs
- "Barrier" Detectors like the one from our partner, Rapiscan can detect nuclear material inside a train moving at 60 km/hr



# Applications of LFS



- Checkpoint and portal detection is also vital to counteract personally concealed devices
- Currently deployed in China largest airports
- In need of upgrade, developing new systems with Zecotek's partner.



- Scanning of mail, parcels and baggage is also critical in avoiding disasters
- Our combined efforts with radiation detection partners will allow screening to be carried out efficiently and accurately



# Zecotek Imaging History



**1981**

First commercial LSO boule grown in Russia by Zagumennyi & Zavartsev (Soviet Publication). Both Scientist are the core research team of Zecotek today. They are the inventors of this material  
ABOVE: Scintillation Crystal Growth Oven



**2002**

Zagumennyi et al. invent the LFS patent. The fastest Scintillator in the market  
ABOVE: Dr. Zerrouk, Zavartsev & Zagumennyi in Russia Labs



## FOUNDER PROFILE

- More than 52 Patents
- Technology advisor to multiple governments
- Over 25 years of experience in creating and commercializing high tech innovations

Dr. Zerrouk is Chairman, President and CEO of Zecotek Photonics Inc. In 1989, he established the first foreign partnered, private, business oriented photonics research Lab in the Ex-Soviet Union (Novosibirsk, Siberia). He duplicated the same model in three prestigious research institutes in Moscow. Dr. Zerrouk acted as a technology transfer advisor, working closely with the Ministry of Science and Technology during the transition period to the Russian federation. He worked on Research and Development strategies for the new economy with prominent members of the Russian Academy of Science and coordinated many government projects in joint relations between Russia and countries like China, Germany, USA, Malaysia, and Saudi Arabia. Dr. Zerrouk was Chairman and CEO of various companies in Europe and Asia.