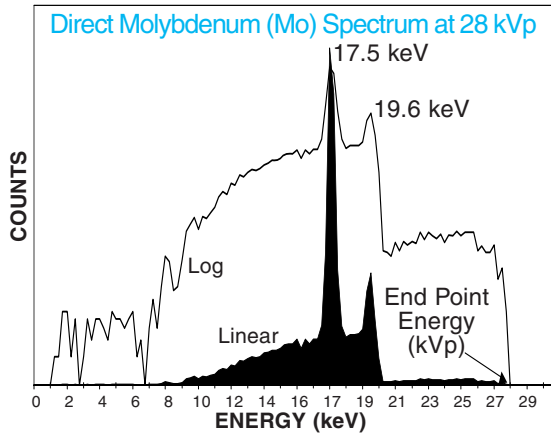


X-Ray Detector for Mammography and Radiology

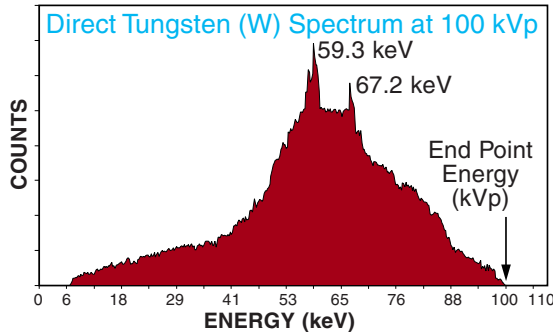
XR-100T-CdTe
SPECIAL
APPLICATION

Medical X-Ray Tube Spectra for Mammography and Radiology

X-Ray Tube Monitor for Mammography Machines



X-Ray Tube Monitor for Radiology Machines



*Spectra courtesy of Andrew Karellas, Ph.D.,
University of Massachusetts Medical School
Worcester, MA 01655 USA*

- **Direct Measurement Spectra**
- **End Point Energy (kVp)**
- **See what the patient gets**
NO Compton Spectra
NO Corrections
NO Calculations
- **Self-Calibrating System**
- **Look straight at the X-Ray tube and record simultaneously both the spectrum and the peak potential (kVp)**
- **The technology that went to Mars on the Pathfinder Mission is now available to Radiology!**
- **A must detector for every Radiology Department**
- **For Quality Assurance in Radiographic and Fluoroscopic Systems**



No Liquid Nitrogen!!!

Design Objective

This detector system was designed with the objective of simultaneously measuring the X-Ray tube peak potential (kVp), and to characterize the mammographic X-Ray tube spectrum.

Significance of the Measurement

- * Both the tube spectrum and the peak potential (kVp) are important parameters affecting the image quality in film-screen and digital mammography.
- * Automatic selection of proper target/filter combination in modern mammography systems maybe affected by improper kVp.
- * In conventional devices, the user depends on central laboratory calibration and has no easy way to calibrate the instrument during use.

Medical X-Ray Tube Spectra for Mammography and Radiology

Complete System Includes:

- Detector - “XR-100T-CdTe”
- Digital Pulse Processor, Power Supply, Shaping Amplifier and MCA - “PX4”
- Collimator Kit - “Collimator Kit”



XR-100T-CdTe Gamma Ray and X-Ray Detector shown with Amptek PX4 Digital Pulse Processor

All Solid State Design - - - No Liquid Nitrogen!!!

System Description

The **XR-100T-CdTe** is a high performance X-Ray and Gamma Ray detector mounted on a thermoelectric cooler (Peltier type) together with the input FET to the preamplifier. Monitored by an integrated circuit, these components are kept at -30°C and are enclosed in a hermetic package with a vacuum tight, light tight Beryllium window. Power and signal processing to the detector is provided by the PX2T in order to ensure quick, stable operation in less than one minute from power turn-on. The output pulse produced by the PX2T connects directly to the input of the Multichannel Analyzer MCA8000A “Pocket MCA.”

Collimator Kit

Amptek has developed a “Collimator Kit” to collimate the primary X-ray beam. The Collimator Housing can accommodate up to two Tungsten collimator disks that are placed inside a bayonet holder in front of the detector. By selecting the appropriate Tungsten collimator disks, the user can reduce the incoming X-ray flux and allow the detector and electronics to process the X-ray spectrum. Seven different Tungsten collimator disks are provided with different size holes in order to allow for a wide range of applications. The EXVC Collimator Housing is made of stainless steel and can also be used inside a vacuum chamber.

