Introduction

e2v scientific instruments is the world’s leading independent EDX and EDXRF detector company, offering unique capabilities to repair or upgrade liquid nitrogen cooled semi-conductor X-ray detectors from any original manufacturer.

e2v scientific instruments offers a global service with fast and reliable turn-round times.

**e2v capabilities and service**

- Repair of detectors from any original manufacturer, past or present e.g. LINK/OXFORD, EDAX, TRACOR/NORAN, KEVEX, PGT
- Repair of all types of detector (e.g. SEM, TEM, XRF)
- Performance upgrades of all detectors to modern state-of-the-art specification with e2v scientific instruments’ sensor component technology
- All window types (ultra thin polymer, Beryllium, windowless) repaired or upgraded
- Conversion of HPGe detectors to Si(Li)
- Windowless to fixed thin window conversions
- Re-configurations for compatibility with new SEM or EDX system
- Large area crystal conversions for greater solid angle
Component technology

e2v scientific instruments has many years of in-depth experience in servicing and upgrading all models and makes of detector and has developed specialised components to facilitate the repair and replacement of any part of the sensor and preamplifier chain.

The unique ability to design and manufacture all parts ‘in house’ ensures a quality result. Key to enabling any repair or performance upgrade are the following components:-

**Si(Li) crystal** e2v is able to reprocess or replace Si(Li) crystals. The crystal is the heart of the detector and is produced to a proprietary formula providing optimal resolution and performance.

**FET** e2v has its own patented range of low noise Field Effect Transistors – the crucial first stage of signal processing – with electronic restore technology and integrated ‘on chip’ architecture.

**Window** A range of X-ray windows are available to replace existing windows or to upgrade the fitted window performance for improved light element detection.

**Preamplifier** e2v’s low noise preamplifier is designed with multi-configuration capability, enabling full compatibility with existing system electronics.
Performance benefit

Your EDX detector is the critical element in achieving high quality data for quantitative and qualitative analysis. The EDX detector is a sensitive instrument and may deteriorate over a long period of time. Today's processing techniques have led to significant improvements in detector performance. Having your detector repaired or upgraded can provide major benefits including:

- **Resolution** – Improved resolution allows you to better separate close or overlapping peaks
- **Spectral quality** – Better peak to background ratios and extremely low peak tailing means better peak identification
- **Low energy sensitivity** – e2v’s Si(Li) crystals have excellent low energy response, and when used with a quality thin polymer window, provide greatly increased detection capability for light elements such as Beryllium, Boron and Carbon
- **Increased throughput** – An upgrade to e2v’s electronic restore FET and low noise preamplifier can give a substantial increase in throughput rate
- **Energy efficiency** – Improve high energy efficiency with e2v’s deep active thickness Si(Li) crystals
- **Increased solid angle and efficiency** – e2v can upgrade your detector to larger active area crystals and improve collimation design for increased performance
- **Low fluorescence crystal mounts** – Minimise spectral contamination for sensitive applications
Typical spectra - before and after repair or upgrade

Before: P/B ~ 1k:1
After: P/B ~ 20k:1

Counts

Energy (keV)

Tail < 0.1%

Poor tail

Energy (eV)
Packages and options

Fixed price repairs and upgrades

e2v scientific instruments provides a range of detector service options to repair or upgrade your detector. For most popular detector types e2v can provide a fixed price repair or upgrade quotation directly. For more complex models, skilled engineers will fully evaluate your detector at e2v’s repair facilities and present options and a fixed price quotation to you prior to any work being carried out.

Repair package

Full repair of detector including replacement of critical sensor parts as required using new e2v manufactured components. Typical repairable problems include:

- Broken windows
- Damaged FETs
- Poor vacuum
- Degraded resolution
- Tailing on peaks
- Electronic problems

Detector repairs carry a 6 month warranty. The detector is guaranteed to operate to its original dewar label specification.

Upgrade package

Upgrade of both window and all critical detector components to new state of the art technology from e2v. A typical upgrade will include:

- Replacement of the X-ray window with a new ultra-thin polymer window
- New Sirius specification Si(Li) crystal
- New ‘MicroFET’ electronically restored FET
- New internal wiring
- New low noise preamplifier
- Cable set

Detector upgrades carry a 1 year warranty. Typical performance for upgraded detectors (10mm² Si(Li) crystal): Resolution <133eV, P/B >20k:1, Tail <0.12%
Fast, reliable and cost effective

Get the optimum performance from your old or damaged EDX detector. Repairs and upgrades are now fast, effective and reliable. To get your detector back into prime condition simply follow these easy steps:

1. Contact e2v (see back cover)
2. Receive a returns reference number and, in most cases, a fixed price offer
3. Send the detector to the repair facility
4. e2v evaluate and quote if required
5. Detector repaired or upgraded – e2v will keep you informed of progress
6. e2v will aim to return your detector in 2-6 weeks depending on the work required
Contact our detector repair and upgrade facility:

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