



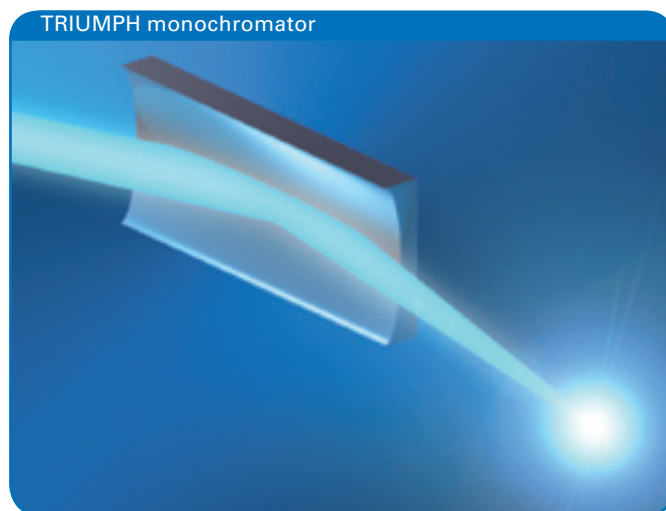
Spec Sheet SC-XRD #43

TRIUMPH MONOCHROMATOR

Triple Your Intensity for Mo $K\alpha$

Molybdenum radiation is the preferred choice for small molecule single crystal diffraction. Traditionally, a flat graphite crystal is used as a monochromator to generate the preferred $K\alpha$ wavelength. This reliable and proven setup allows to measure crystals between about 0.15 mm and 0.6 mm in size. Recent improvements in curved graphite crystal technology have brought a tremendous increase in intensity compared to the conventional graphite monochromator.

The curved crystal TRIUMPH monochromator delivers more than three times higher intensity at the sample. Such a significant increase in beam intensity allows data collection on even more challenging, weakly diffracting samples. The TRIUMPH monochromator provides the homogenous beam profile known from flat graphite based systems.



Specifications and Features

- Curved crystal monochromator including housing for Mo $K\alpha$ radiation
- Beam size can be adjusted using easy-to-replace collimators
- Collimators included for beam sizes (mm): 0.2, 0.3, 0.5
- Delivers superior data from samples which are challenging with a flat-graphite monochromator setup
- Achieve faster data acquisition and increase your productivity
- Excellent choice for general purpose and service crystallography
- In-field upgrades available, no service engineer required for installation
- Ideal for crystals between ~0.15 mm and ~0.6 mm in size
- Attractive price/performance ratio
- Part number: 842-094800

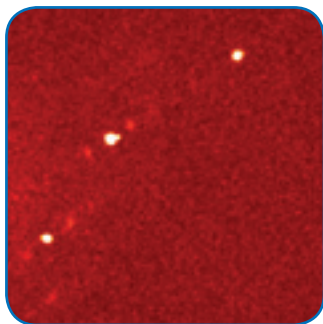


Image using flat graphite monochromator

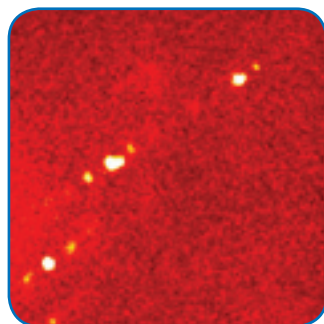
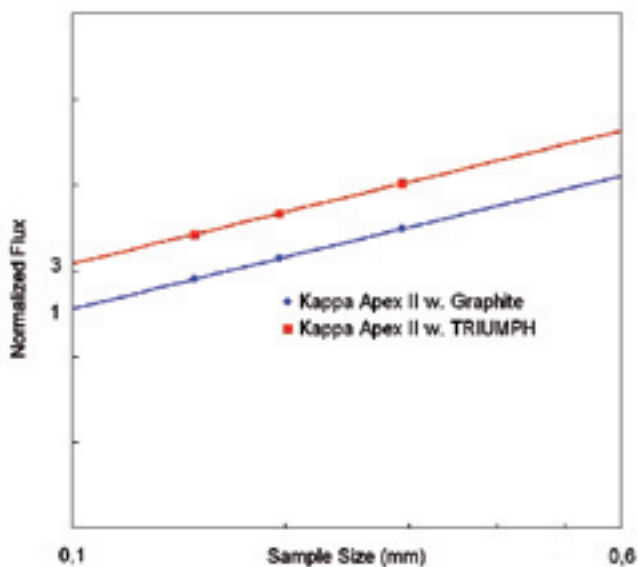


Image using TRIUMPH monochromator

"Our newly installed TRIUMPH monochromator produces a multiple in intensity when compared with a flat graphite monochromator. For a rather small investment we are now able to achieve both at the same time, shorter measurement times and significantly better data."

Prof. R. Boese, University Duisburg-Essen, Germany

TRIUMPH versus Flat Graphite monochromator



Note: Curves are parallel over a wide range of sample sizes.

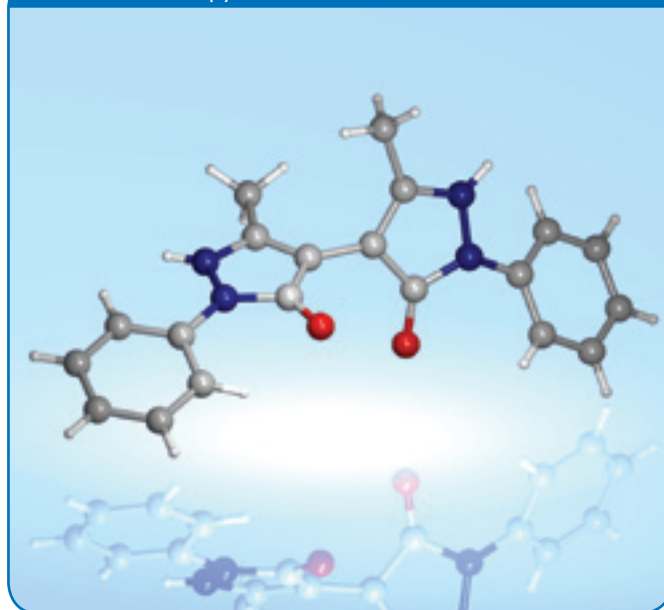
Application

For comparison, data were collected on a small sample of Bispyrazolone (0.05 mm x 0.25 mm x 0.40 mm), $C_{20}H_{18}N_4O_2$, *Pbca*, $a=8.7355(7)$ Å, $b=18.7028(15)$ Å, $c=20.6100(17)$ Å.

Data were acquired with 30s/0.5° scans for the flat graphite monochromator and 10s/0.5° scans for the TRIUMPH monochromator. Complete, 5-fold redundant data extends to 0.75 Å in both cases and although the exposure time for the TRIUMPH data is only one third, it is of better quality:

| | TRIUMPH | Flat Graphite |
|---|---------|---------------|
| Data collection time (h) | 3.25 | 8.25 |
| Data all | 4253 | 4239 |
| Data observed, $F_o > 4\text{sig}(F_o)$ | 2862 | 2691 |
| Rint | 2.23% | 2.47% |
| Rint | 2.03% | 2.31% |
| R1 | 3.79% | 3.98% |

Structure of Bispyrazolone



All configurations and specifications are subject to change without notice. Order No. DOC-S86-EXS043 V3. © 2010 Bruker AXS. Printed in Germany.

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