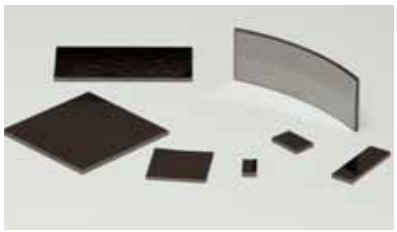
Graphite Monochromators

Graphite monochromators from Momentive Performance Materials are highly-oreinted forms of high-purity pyrolytic graphite that may diffract x-rays and neutrons with great efficiency. In x-ray analysis, they may provide 3 to 5 times greater intensity than conventional crystals. A singly-bent focusing monochromator using graphite may yield 3 times the intensity of lithium fluoride at equivalent resolution. Graphite monochromators from Momentive Performance Materials may provide the lowest mosaic spread available.

Potential Applications

- X-ray diffraction
- Neutron sscattering and diffraction
- Scanning tunneling microscopy - calibration and substrates



Typical Physical Characteristics of HOPG (@300K)[1]		
Spacing of Reflecting Planes (002)	3.355-3.359 Å	
Mosaic Spread	0.4° ± 0.1° FWHM	
Density	2.255-2.265/cm3	
	Parallel (002)	Perpendicular (002)
Thermal Conductivity (W/mK)	1600-2000	~8
Thermal Expansion (°C)	Slightly negative	20 x 10^{-6}
Electrical Resistivity (ohm-cm)	3.5-4.5 x 10^{-5}	0.15-0.25

Products[1]

HOPG plates are produced as flat, singly-bent, and doubly-bent shapes. They are classified according to mosaic spread. Minimum size is 12mm x 12mm.

Grade	Mosaic Spread*	Nom. Thickness (mm)	Maximum Size* (mm)
ZYA	0.4° ± 0.1°	2	50 x 75
ZYB	0.8° ± 0.2°	2	50 x 75
ZYH	3.5° ± 1.5°	2,4,6,8	75 x 75

Thickness tolerances + 0/-.4mm

Standard radii for singly-bent plates:
115, 225, 250, 510, 790, and 1300 mm.

Standard sizes for bent monochromators:

12x12, 20, 25, 40	20x20, 25, 40, 50
15x15, 25, 40, 50	25x25, 40, 50, 75

Thickness for bent plates: 2 +0/-1 mm.

[1] Typical data are average and actual results may vary. Typical data shall not be used as product specifications.

* Custom mosaics and tolerances available on request.