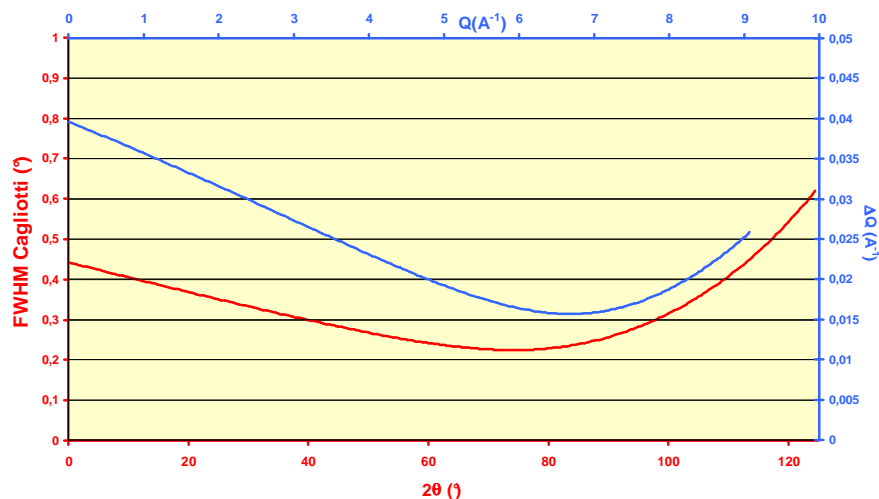


### 3T2 High Resolution Powder Diffractometer

Type of instrument	Two-axis diffractometer
Beam tube	Thermal (30 x 80 mm <sup>2</sup> )
Monochromator	Vertically focusing Ge (335)
Incident wavelength .	1.225Å
Collimation	$\alpha_1$ variable (10', 14', 21')
Maximum beam size at specimen	20 x 60 mm <sup>2</sup>
Detectors	50 <sup>3</sup> He detectors, 2.4° apart
Angular range	5 < 2 $\theta$ < 122°
Typical step size $\Delta(2\theta)$	0.05° (minimum $\Delta(2\theta)$ 0.02°)
Maximum flux at specimen ( $\alpha_1 = 10'$ )	10 <sup>6</sup> n cm <sup>-2</sup> s <sup>-1</sup>
Typical acquisition time $\Delta T$ ( $\alpha_1 = 10'$ )	12h < $\Delta T$ < 24h
<b>Relative flux <math>\Phi</math> and Cagliotti Profile parameters</b>	
$\alpha_1 = 10'$	$\Phi = 1$ $U = 0.255, V = -0.385, W = 0.196$
$\alpha_1 = 14'$	$\Phi = 1.15$ $U = 0.311, V = -0.429, W = 0.201$
$\alpha_1 = 21'$	$\Phi = 1.25$ $U = 0.432, V = -0.547, W = 0.232$
Asymmetry (Van Laar & Yelon)	$S\_L = 0.031, D\_L = 0.056$
Ancillary equipment	Cryofurnace (1.5 K - 550 K) Furnace (T < 1000°C, P ~10 <sup>-4</sup> mbar)

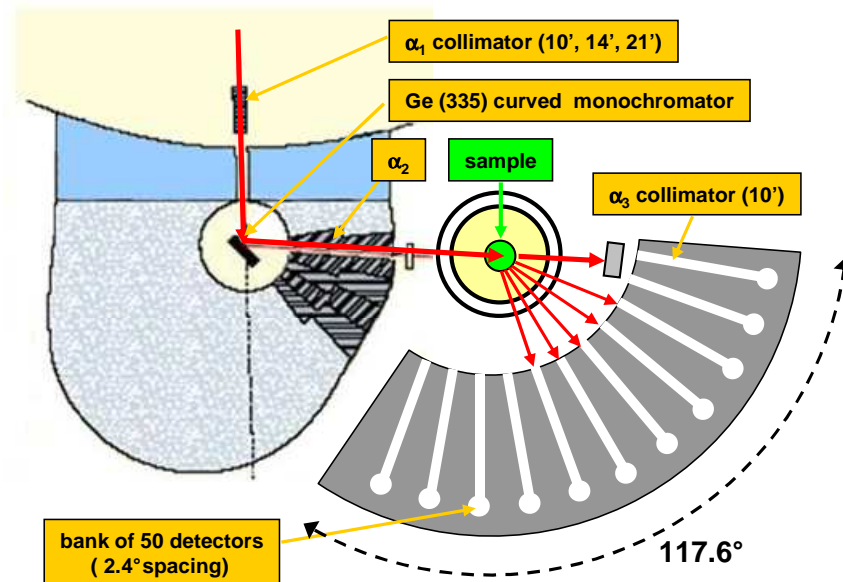
3T2 RESOLUTION CURVE ( $\alpha_1 = 10'$ )



--- 3T2 (March 2009) ---

### High Resolution Powder Diffractometer

3T2



3T2 is a high resolution two-axis diffractometer dedicated to neutron powder diffraction studies of samples with primitive unit cell volume up to ~1000 Å<sup>3</sup>. Typical applications deal with solid state physics, chemistry and material science (High-resolution refinements of nuclear structures in the range 2K < T < 1300K, in complement to XRD or magnetic structure studies on G4.1).

- Precise localization of light elements (H/D in metal deuterides for H-storage)
- Distinction between neighbouring elements in the periodic table (Transition metals such as Mn/Fe, in complement to X-ray powder diffraction)
- Accurate estimation of temperature factors.

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