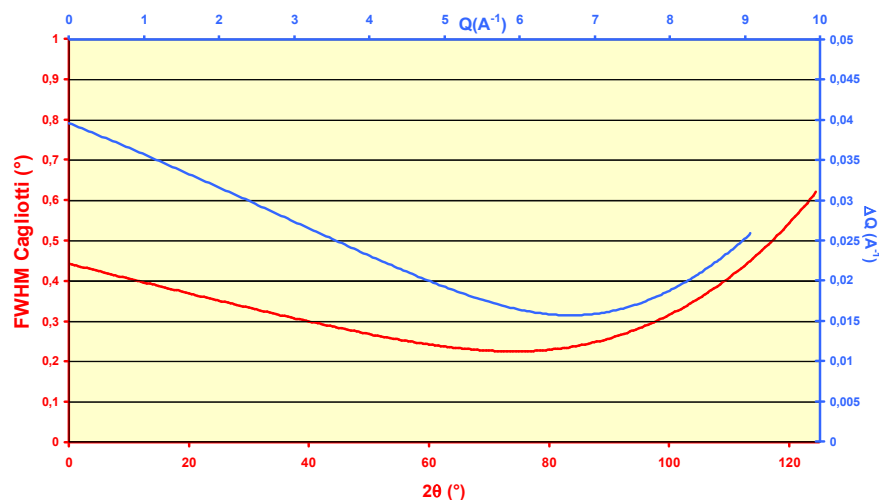


3T2 High Resolution Powder Diffractometer

Type of instrument	Two-axis diffractometer
Monochromator	Vertically focusing Ge (335)
Incident wavelength .	1.225Å
Collimation	α_1 variable (10', 14', 21')
Maximum beam size at specimen	20 x 60 mm ²
Detectors	50 ³ He detectors, 2.4° apart
Angular range	5 < 2 θ < 122°
Typical step size $\Delta(2\theta)$	0.05° (minimum $\Delta(2\theta)$ 0.02°)
Maximum flux at specimen ($\alpha_1 = 10'$)	10 ⁶ n cm ⁻² s ⁻¹
Typical acquisition time ΔT ($\alpha_1 = 10'$)	12h < ΔT < 24h
Relative flux Φ and Cagliotti Profile parameters (FullProf, Jana : multiply by 1000)	
$\alpha_1 = 10'$	$\Phi = 1$ 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 < 1200°C, P ~10 ⁻⁴ mbar or T < 1000°C, gas flow

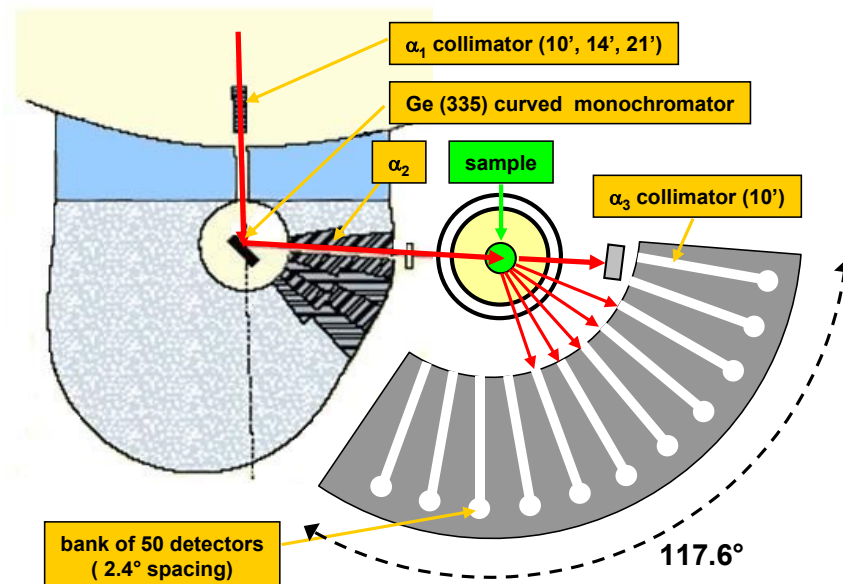
3T2 RESOLUTION CURVE ($\alpha_1 = 10'$)



--- 3T2 (January 2014) ---

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. 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.

3T2 is complemented by the high resolution, cold diffractometer G4.4 for the study of larger systems.

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