

X-ray diffractometer STOE STADI P, # 6.11.KL 61249, 2006 year production.

### TECHNIQUE

**RADIATION TYPE, SOURCE** X-rays, Cu  $\lambda$  **VALUE USED** 1.540598 Å,  $K\alpha_1$   
 **$\lambda$  DISCRIM.(Filters Mono, Etc.)** Primary beam, curved Ge Mono.  
 **$\lambda$  DETECTOR (Film, Scint, Position Sensitive, etc.)** mini PSD (linear)  
**INSTRUMENT DESCRIPTION (Type, Slit, etc.)** 130 mm horizontal diffractometer STOE STADI P, Transmission mode (equivalent to Guinier geometry); distance from X-ray tube focus to monochromator 260mm, distance from sample to detector 220 mm; monochromator blade, horizontal slit system, vertical slit 6 mm, short collimator for transmission mode, vertical reducer slit 4 mm on PSD, a two sets of Soller Slits on primary beam and on PSD entrance window. **DIV= 0.3 REC=**  
**INSTRUMENTAL PROFILE BREADTH** 0.095  $^{\circ}2\theta$  56.122 (Si) **TEMPERATURE ( $^{\circ}K$ )** 296 $\pm$ 0.5  
**SPECIMEN FORM/PARTICLE SIZE** Powder, spread evenly on the transmission foil with diluted glue or vacuum grease / < 30  $\mu m$   
**RANGE OF  $2\theta$  FROM** 2.200  **$^{\circ}2\theta$  TO** 135.000  **$^{\circ}2\theta$  SPECIMEN MOTION** Sample spinner  
**INTERNAL/EXTERNAL  $2\theta$  std (if any)** Si SRM640b **LATTICE PARAMETER OF  $2\theta$  STD** 5.43094 Å  
 **$2\theta$  ERROR CORRECTION PROCEDURE** sample shift refinement  
**INTENSITY MEAS. TECHNIQUE** Step scan data **PEAK X INTEGRATED X**  
**MINIMUM INTENSITY THRESHOLD (IN RELATIVE INTENSITY UNITS)**  
**INTENSITY STD USED**  $\alpha$ -Al<sub>2</sub>O<sub>3</sub> SRM676  **$^{\circ}2\theta$ 's OF INTENSITY** 43.350 <1 1 3 >  
**INTENSITY RATIO I/I<sub>c</sub>** **CONVERSION FACTOR IF CORUNDUM NOT USED**  
**RESOLUTION (FWHM) FOR THIS MATERIAL:**  $^{\circ}2\theta$  AT  $^{\circ}2\theta$   
 **$2\theta$  REPRODUCIBILITY FOR THIS MATERIAL:**  $^{\circ}2\theta$  AT  $^{\circ}2\theta$

## Instrumentation Summary

### Instrument Type

Date: 9 May, 2009

Diffractometer:  Manual      Camera:  Guinier  
 Automated       Debye-Scherrer  
 Gandolfi

Other \_\_\_\_\_

Brand and/or Type number STOE STADI P, # 6.11.KL 61249, 2006 year production

If diffractometer: Monochromator:  Primary Beam  
 Secondary Beam  
 None

Detector:  Scintillation  
 Si(Li)  
 Other (mini PSD (linear))

### Intensity Measurement

peak height       counter       microdensitometer  
 peak area       dead-time corrected       visual

### Comments

130 mm horizontal diffractometer STOE STADI P, Transmission mode (equivalent to Guinier geometry); distance from X-ray tube focus to monochromator 260 mm, distance from sample to detector 220 mm; curved Ge (1 1 1) motorized monochromator with blade, linear PSD as detector, horizontal slit system, vertical slit 6 mm, short collimator for transmission mode, vertical reducer slit 4 mm on PSD, a two sets of Soller Slits on primary beam and on PSD entrance window.

External standards: NIST SRM 676 (Al<sub>2</sub>O<sub>3</sub>), NIST SRM 640b (Si).