

# Application Gallery **FIBERS**

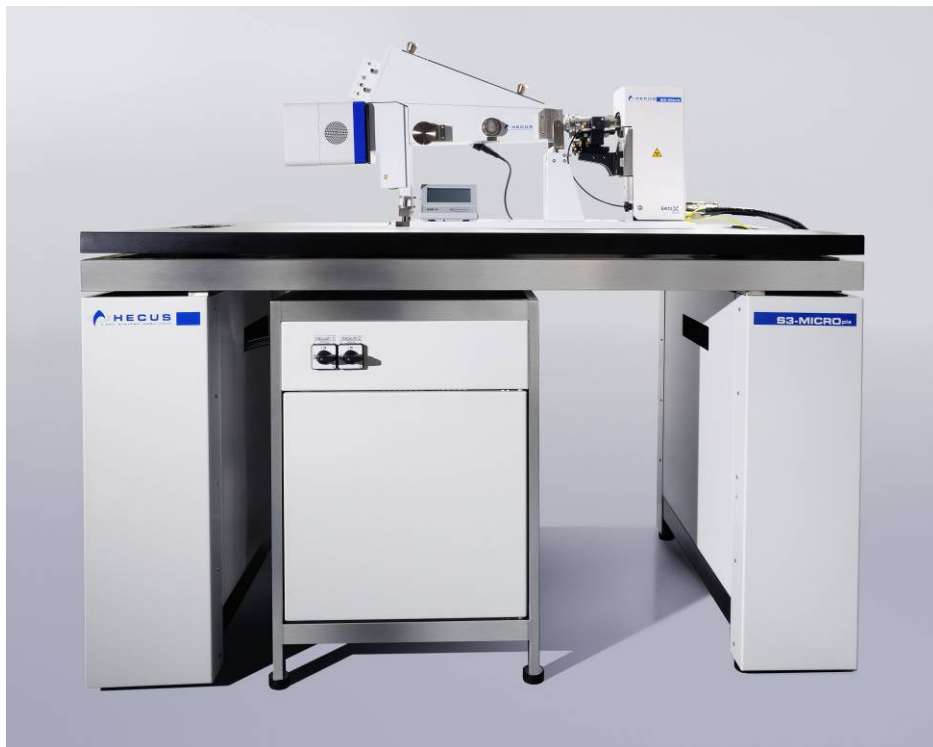
POLYMERS & LIQUID CRYSTALS  
NANOPARTICLES POWDERS  
FIBRES PROTEINS THIN-SOLID-FIL  
POLYMERS & LIQUID CRYSTALS  
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## HIGHLIGHTS OF S3-MICRO

- The point-focussing beam geometry of S3-MICRO has proven highly advantageous by offering the possibility selecting high-flux (MAXS) and high resolution (SAXS) mode, resp.
- Experimental setup for different samples (e.g. for powders, liquids) can be changed and adapted quickly.
- Modular setup allows quick adaptation to use different detectors and/or q-ranges
- Measurements may require less than 10 minutes per sample



# FIBERS

## Extruded LC fiber

### Experimental Setup

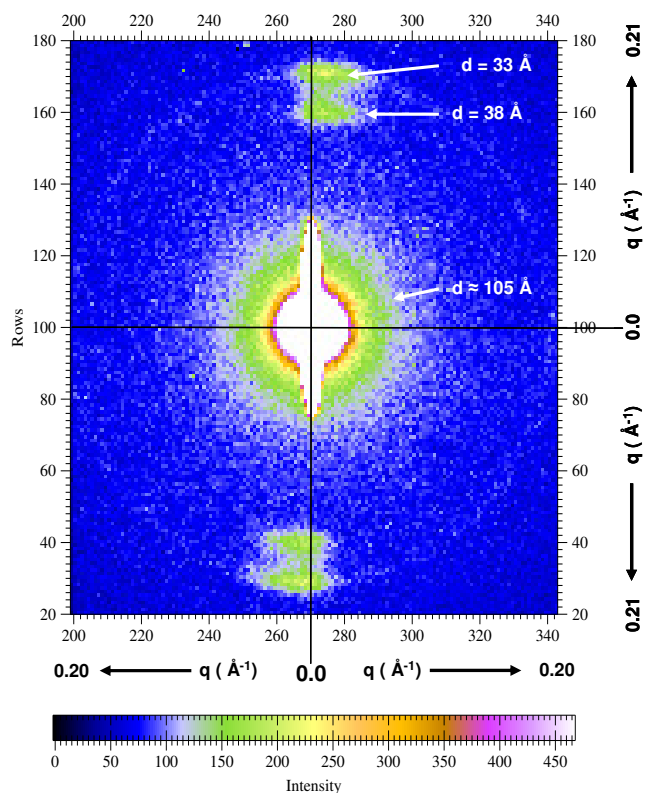
Samples	extruded LC fiber
Camera	Hecus S3-MICROpix®
X-rays	Cu-K $\alpha$ ( $\lambda = 1.54 \text{ \AA}$ )
Power	50 kV, 0.6 mA (50 W)
Collimation Setting	Standard Flux
Detectors	Pilatus 100K (pixel: 0.172x0.172 mm <sup>2</sup> )
Sample-detector distance	258 mm (SAXS) 79 mm (MAXS)
Calibration	by Ag-stearate ( $d = 48.68 \text{ \AA}$ )
Measured Ranges	up to $0.6 \text{ \AA}^{-1}$ (SAXS) $0.07 < q < 1.8 \text{ \AA}^{-1}$ (MAXS)
Temperature	20°C
Exposure time	SAXS: 100s, MAXS: 300 s (no beam-stopper used), 1800 s (in case a beam-stopper was used)

### SAXS (Linear Plot)

**2D-SAXS:**

*zoomed into the low  $q$ -range  
distance: 258 mm; exposure: 100 s  
(no beam-stop was used!)*

Direction of the fiber in the beam  $\rightarrow$



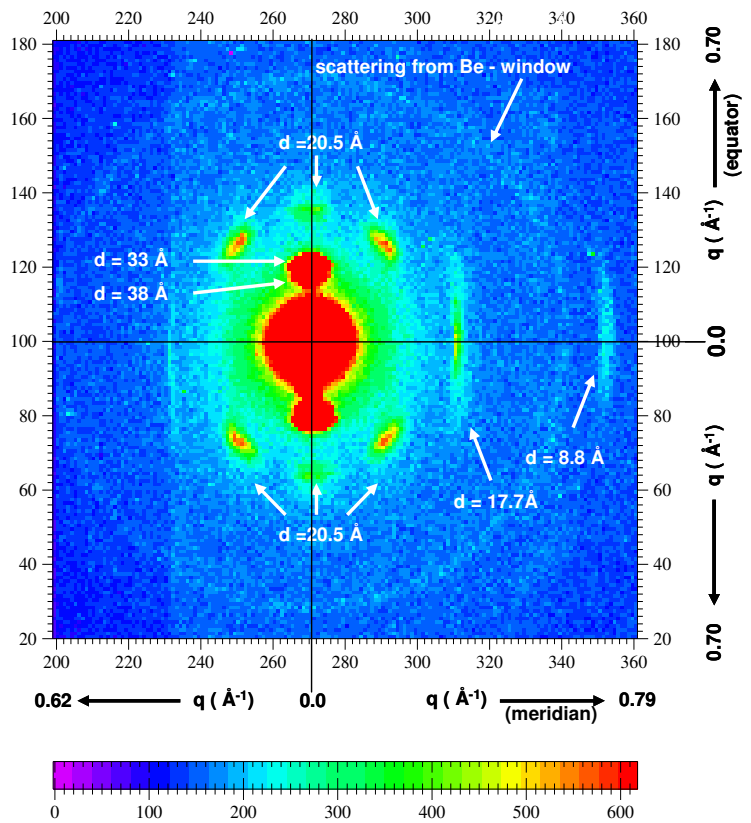
## MAXS (Linear Plot)

### 2D-MAXS:

(zoomed into the medium-q-region)  
 distance: 79 mm; exposure: 300 s

The d-values of the centro-symmetric reflections are indicated in the plot.  
 No beam-stop was used!

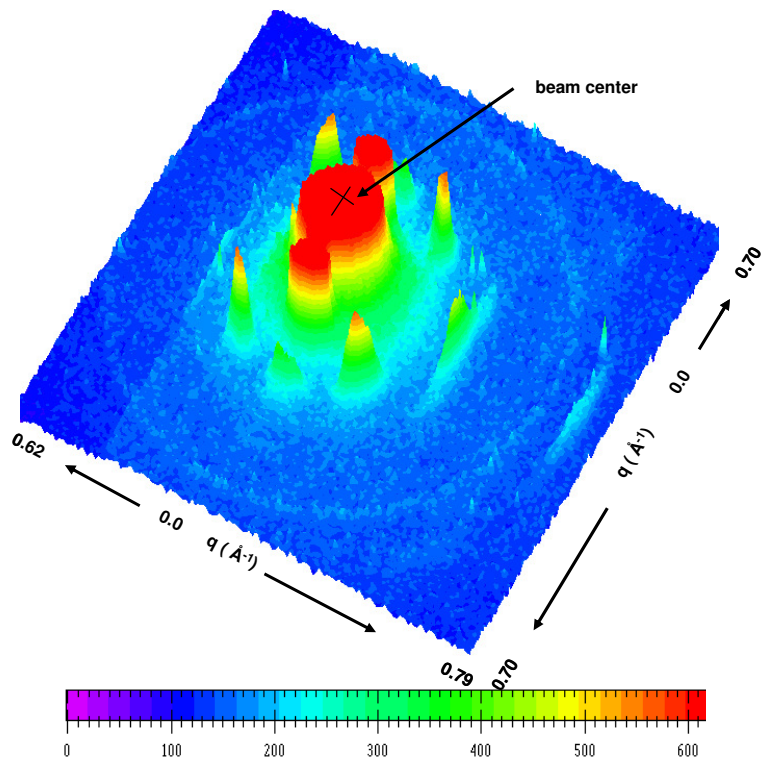
Direction of the fiber in the beam  
 →



### 2D-MAXS:

(zoomed into the medium-q-region)  
 distance: 79 mm; exposure: 300 s

The d-values of the reflections are indicated in the previous picture



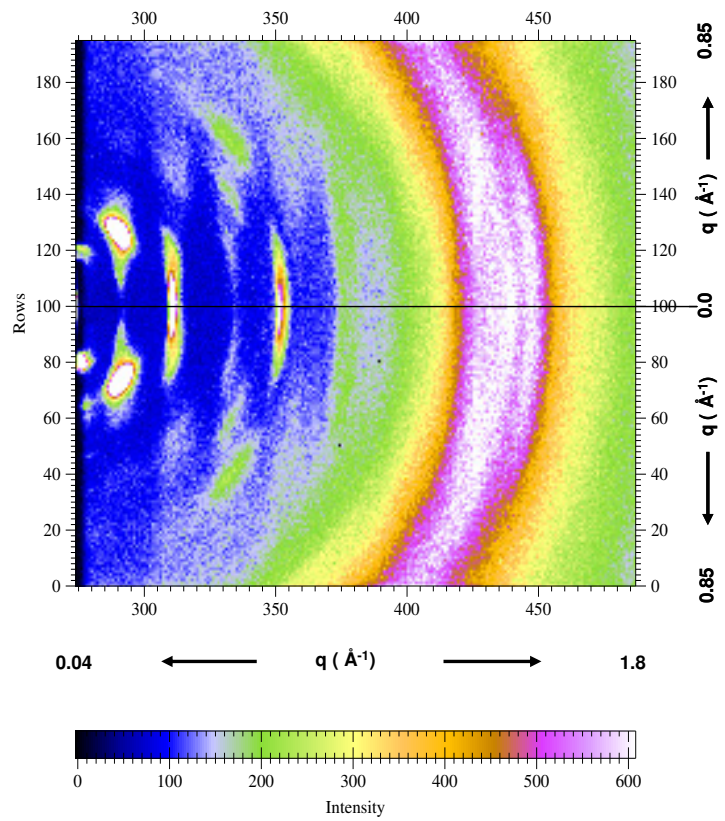
## MAXS (Linear Plot) - Entire q-range

### 2D-MAXS: (entire q-range)

distance: 79 mm; exposure: 1800 s

Main-beam and the other symmetric half of the pattern are blocked by the beam-stopper

Direction of the fiber in the beam →



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