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Polydomain-Monodomain Orientational Process in Smectic-C Main-Chain Liquid-Crystalline Elastomers

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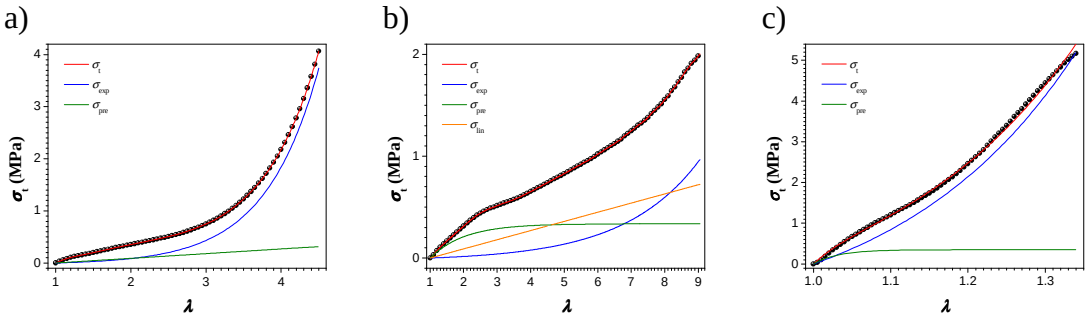


Figure SI-1. Uniaxial true stress-strain curves (σ_t vs. λ) at 25 ºC and the fitting curves (red: σ_t) with the corresponding components (orange: σ_{lin}; green: σ_{pre}; blue: σ_{exp}) for a) the polydomain sample, b) the perpendicular deformation of the conical layer distribution sample, and c) the parallel deformation of the conical layer distribution sample. Note: $\sigma_t = \sigma_n \cdot \lambda$

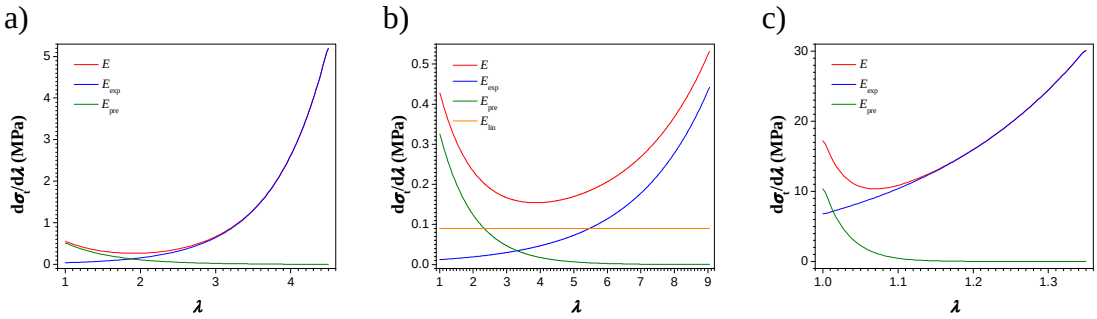


Figure SI-2. Derivatives of the fitting curves σ_t (red: E) with the corresponding derivative components (orange: E_{lin}; green: E_{pre}; blue: E_{exp}) for a) the polydomain sample, b) the perpendicular deformation of the conical layer distribution sample, and c) the parallel deformation of the conical layer distribution sample.

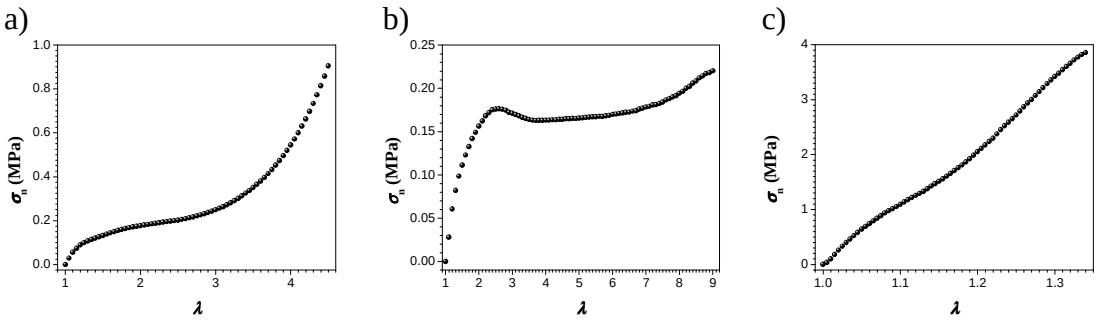


Figure SI-3. Uniaxial nominal stress-strain curves (σ_n vs. λ) at 25 ºC for a) the polydomain sample, b) the perpendicular deformation of the conical layer distribution sample, and c) the parallel deformation of the conical layer distribution sample. Note: $\sigma_t = \sigma_n \cdot \lambda$; $\sigma_n = F/A_0$

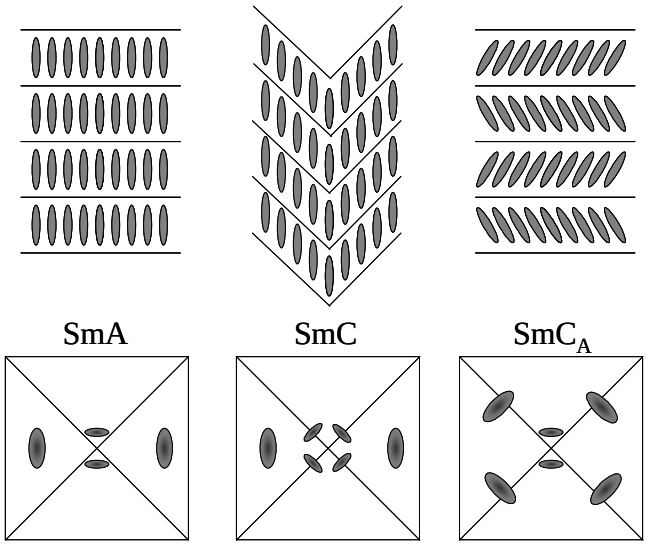


Figure SI-4. Arrangement of the mesogens and layers in the smectic phases SmA, SmC and SmC_A, and their corresponding 2D X-ray scattering pattern.

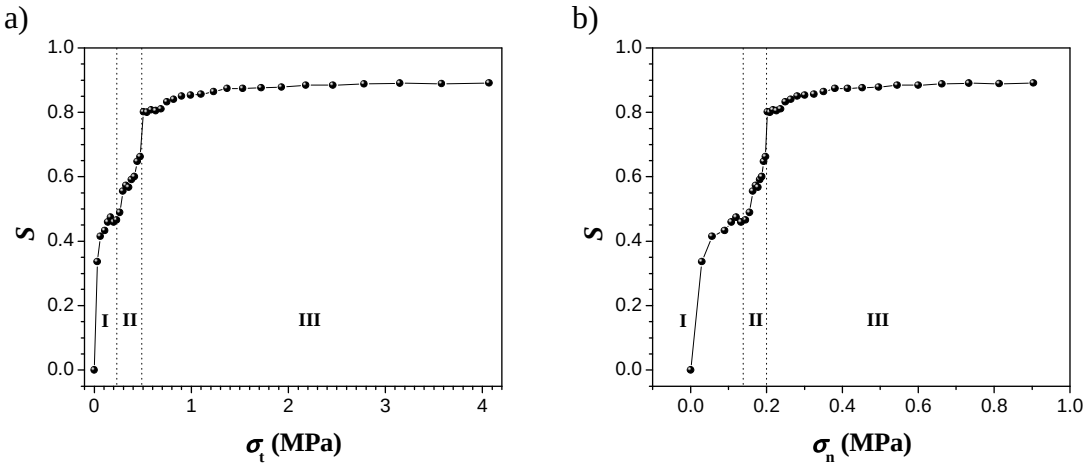


Figure SI-5. Order parameter (S) as function of a) the true stress (σ_t) and b) the nominal stress (σ_n) for the polydomain of the SmC MCLCE. The three regions are the corresponding regions described in the text. Note: $\sigma_t = \sigma_n \cdot \lambda$; $\sigma_n = F/A_0$

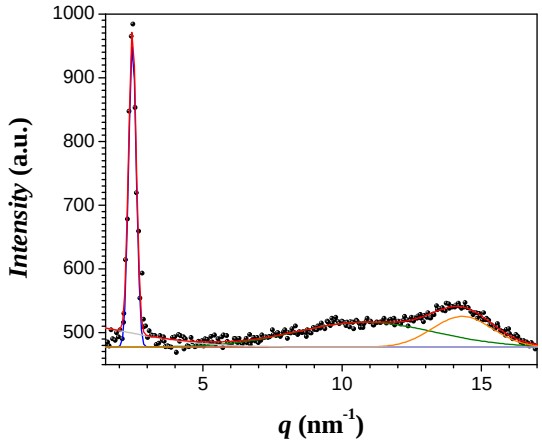
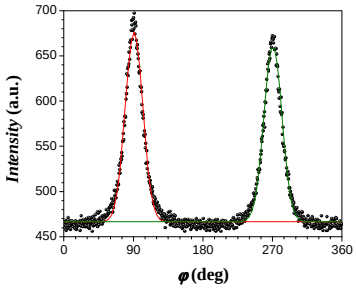
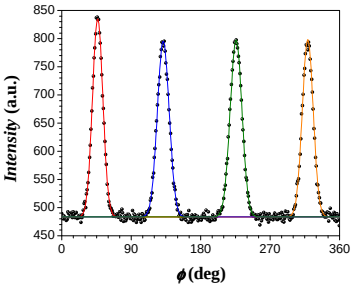
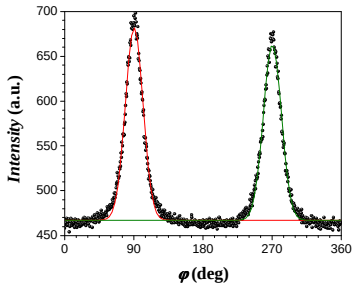
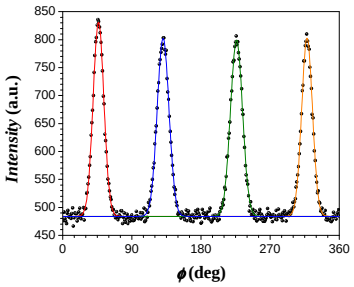
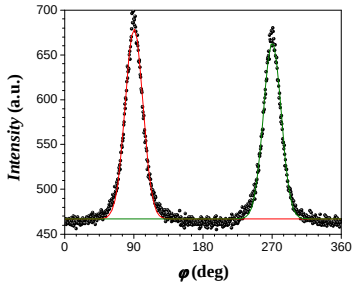
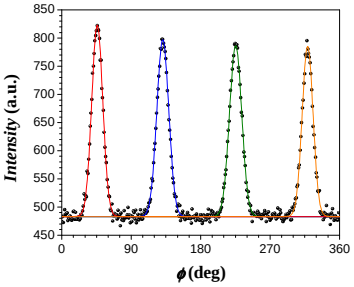
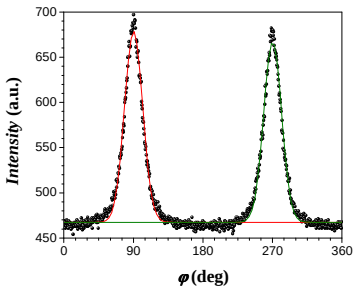
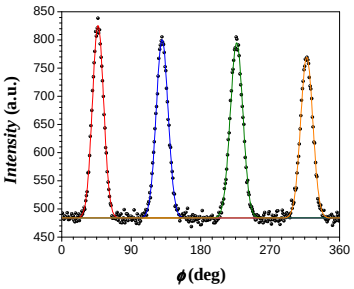
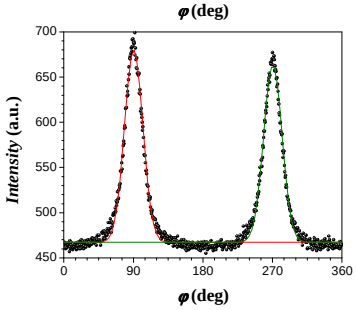
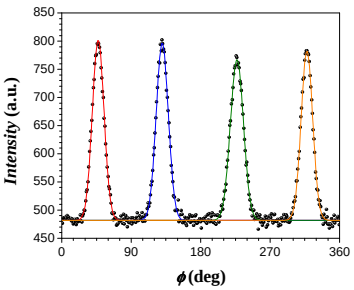
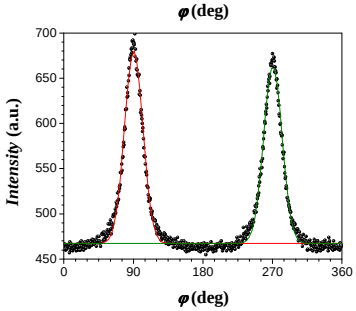
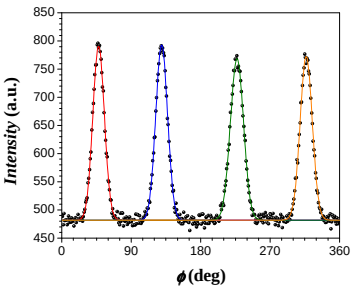


Figure SI-6. X-ray scattering radial distribution for the polydomain of the SmC MCLCE at 25 ºC, and the fitting curves (red: accumulative fitting; blue: smectic layering; green: tetramethyldisiloxane domain; orange: mesogenic domains).

2D X-ray	WAXS	SAXS
λ = 4.5		
λ = 4.4		
λ = 4.3		
λ = 4.2		
λ = 4.1		
λ = 4.0		

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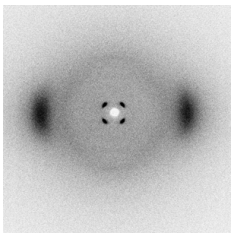

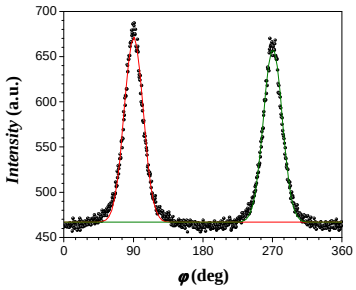

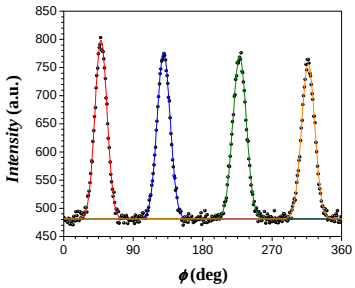

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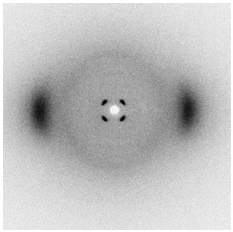

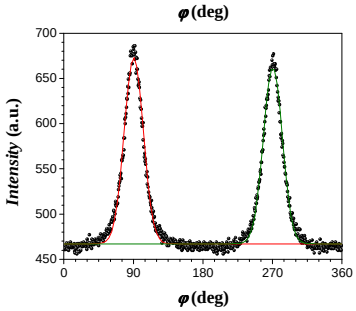

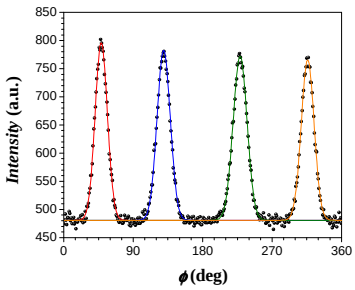

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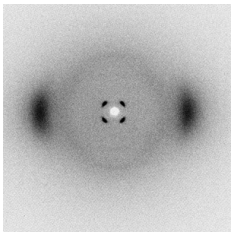

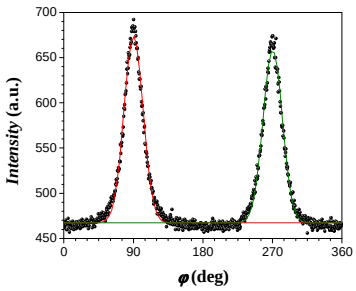

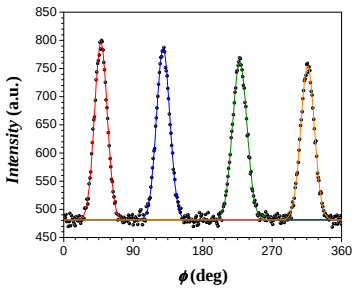

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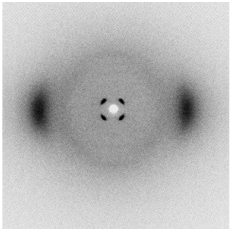

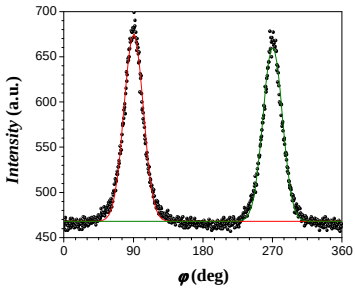

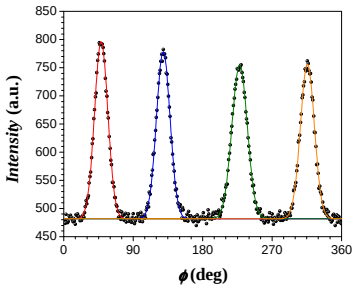

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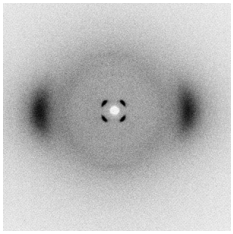

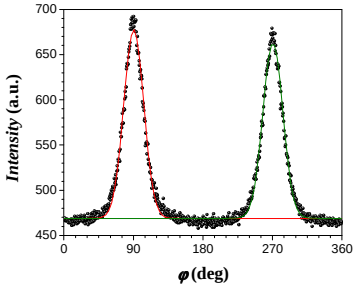

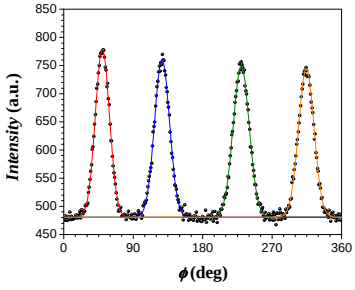

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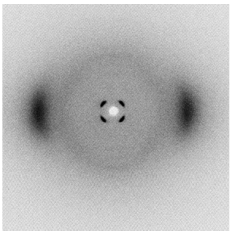

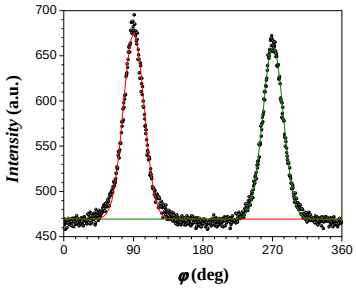

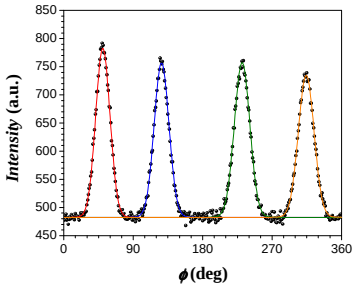

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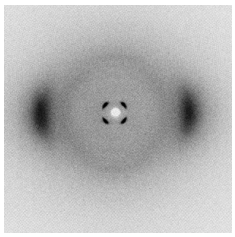

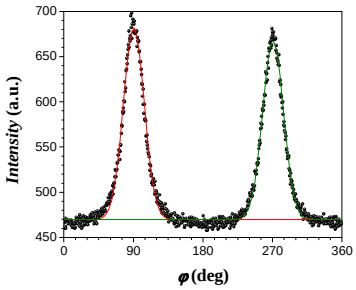

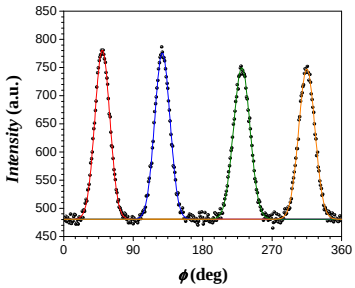

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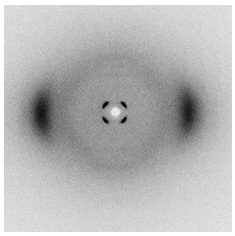

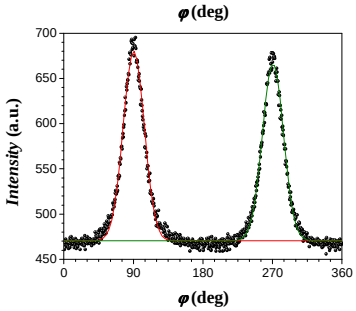

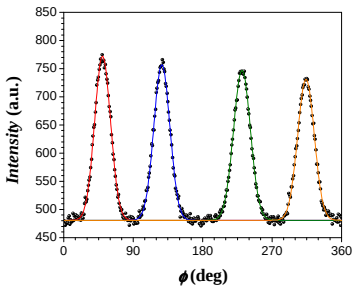

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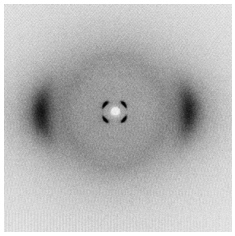

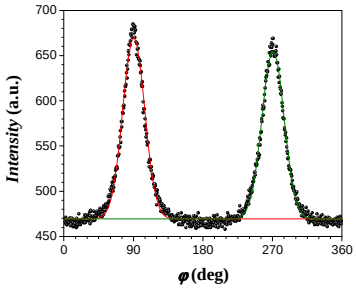

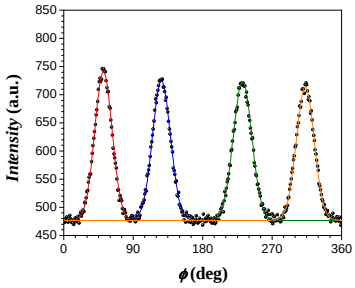

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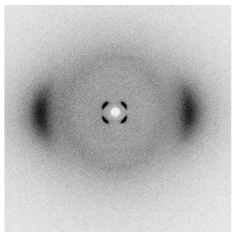

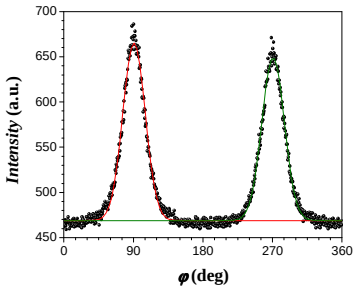

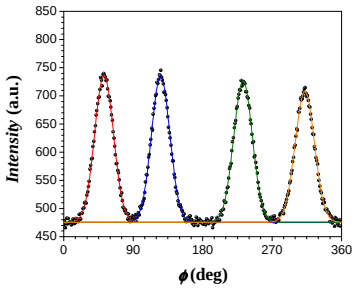

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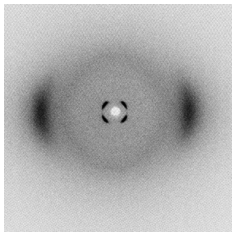

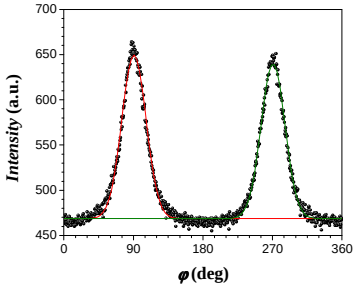

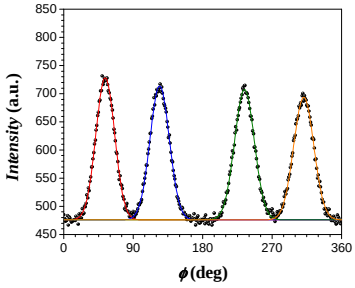

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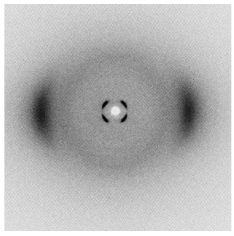

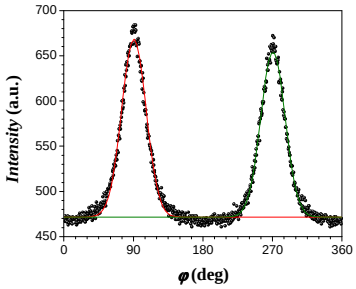

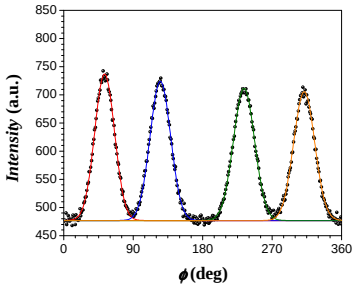

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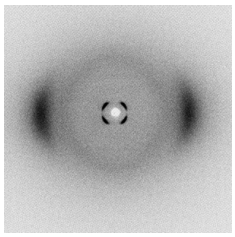
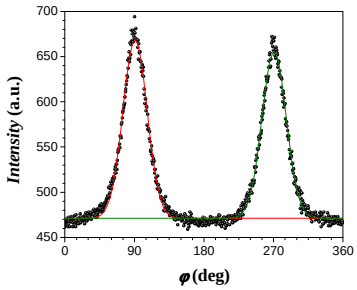
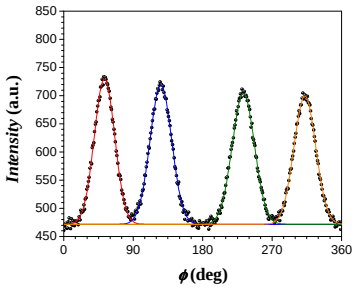
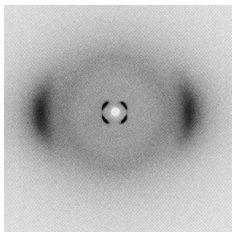
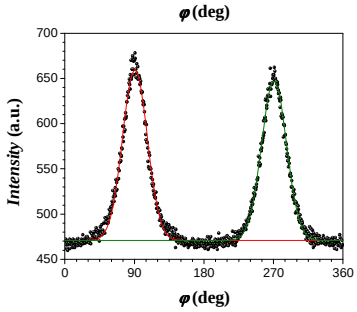


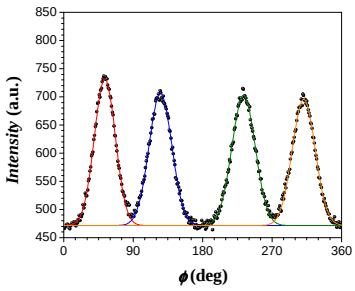




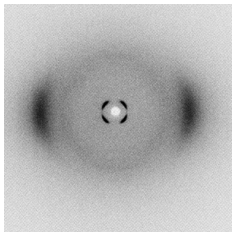
$\lambda = 2.6$

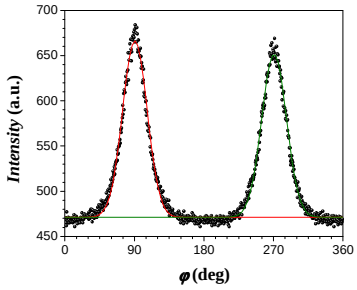


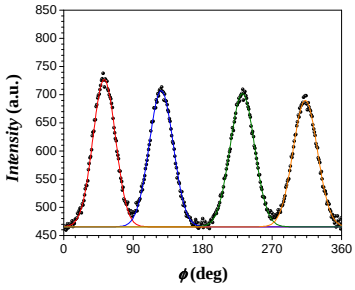




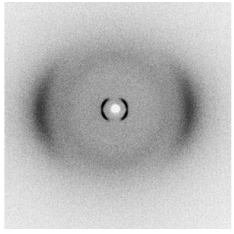
$\lambda = 2.5$

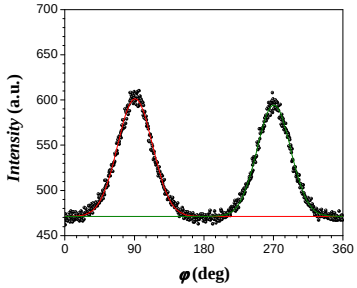


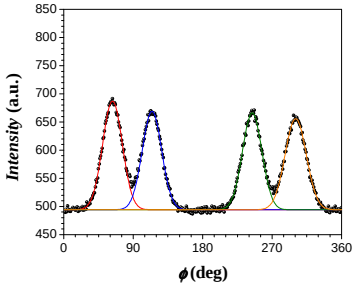




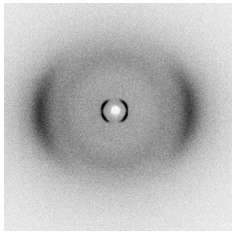
$\lambda = 2.4$

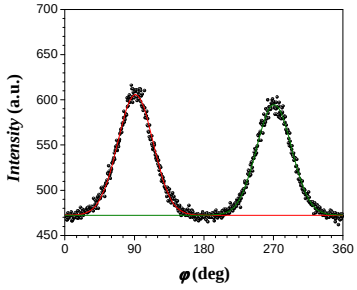


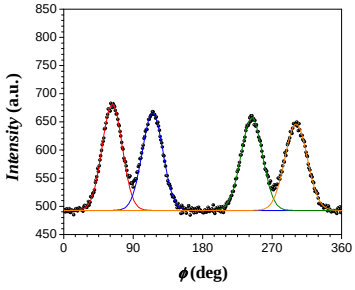




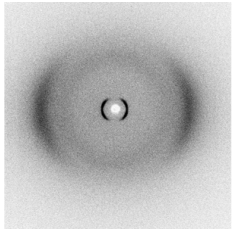
$\lambda = 2.3$

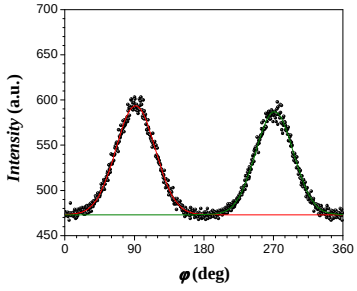


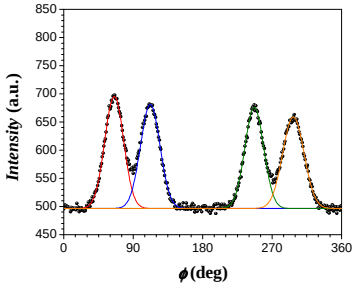




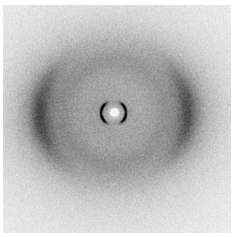
$\lambda = 2.2$

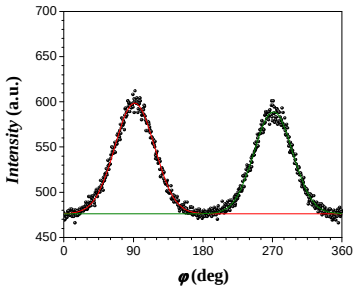


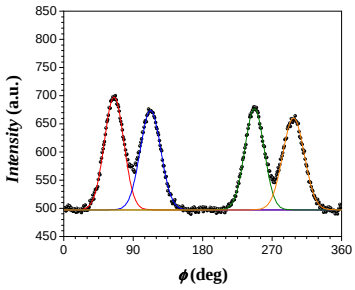




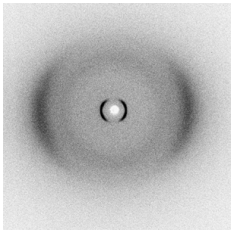
λ = 2.1

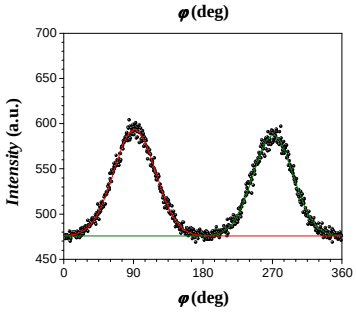


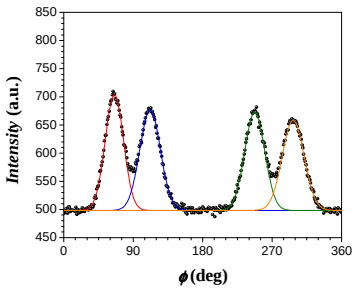




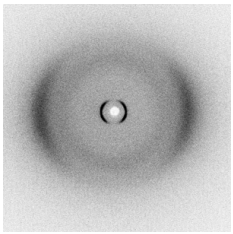
λ = 2.0

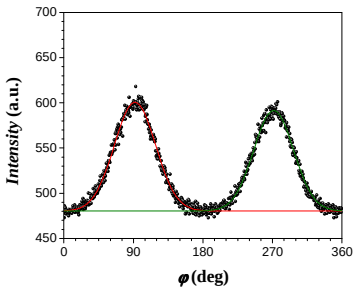


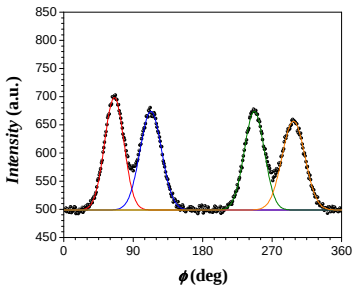




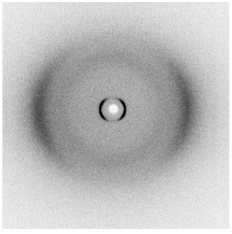
λ = 1.9

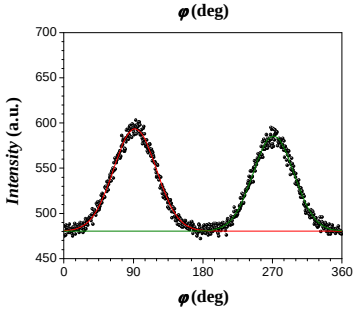


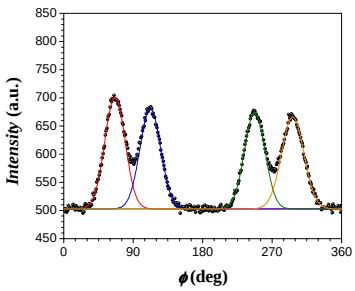




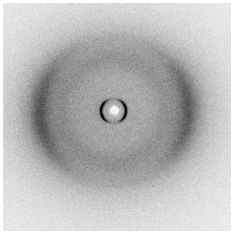
λ = 1.8

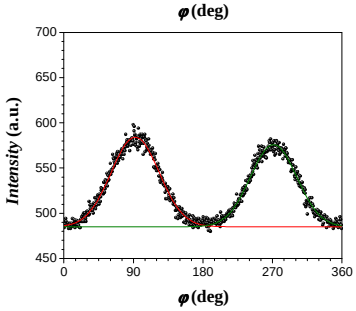


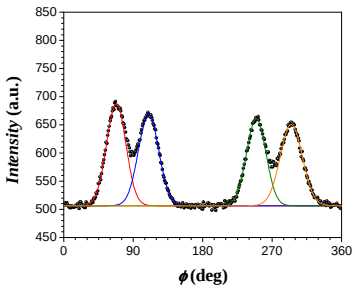




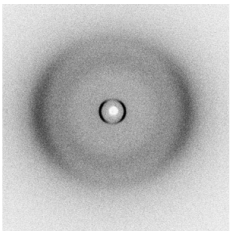
λ = 1.7

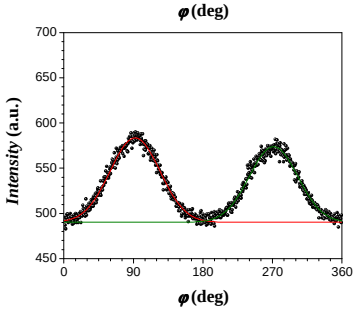


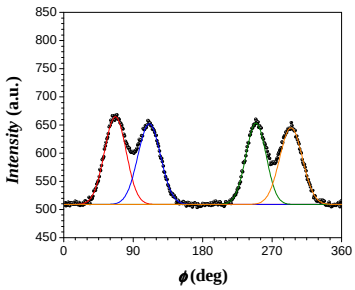




λ = 1.6







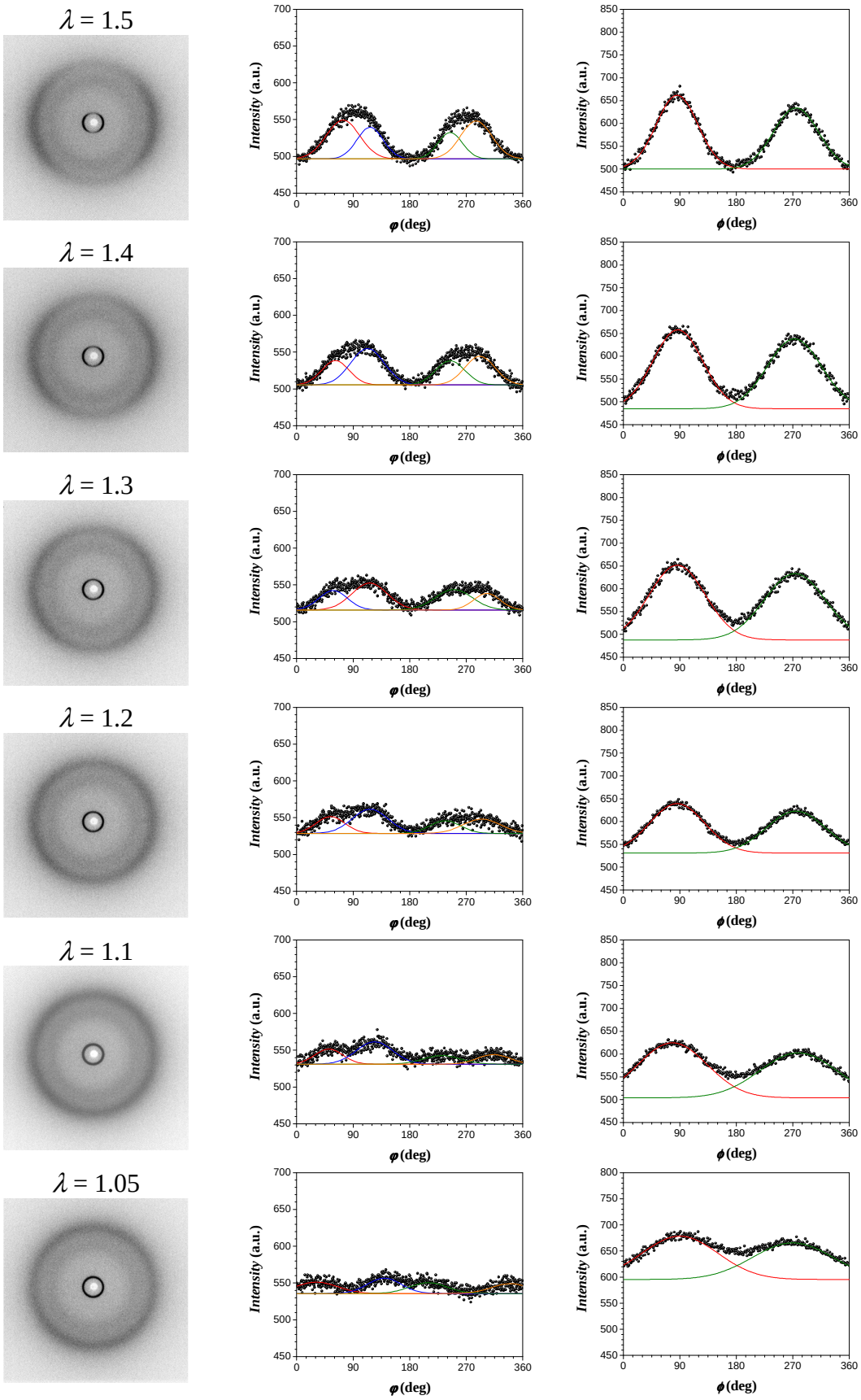


Figure SI-7. 2D X-ray patterns during the uniaxial deformation of the polydomain of the SmC MCLCE. Azimuthal distributions in the WAXS and SAXS regions with their corresponding fitting curves.