

## Supplementary information

# Transition Pathway Between Gyroid and Cylindrical Morphology in Linear Triblock Terpolymer Thin Films

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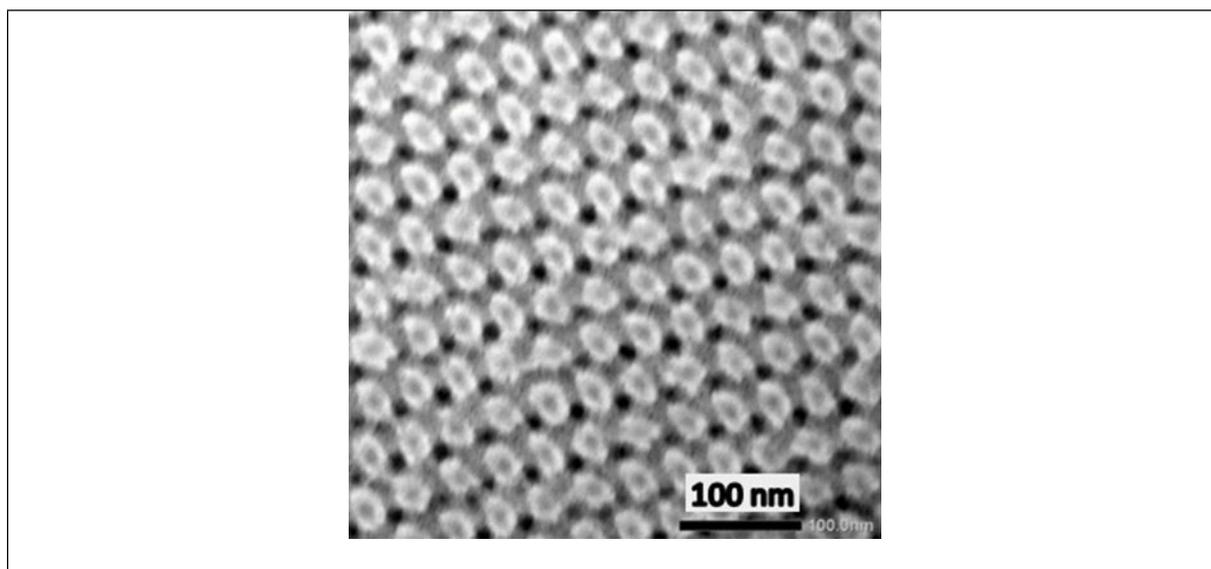


Figure SI-1: TEM of a bulk specimen of the ISP sample staining by OsO<sub>4</sub> and I<sub>2</sub> used in this study showing typical hallmarks of (111) plane of a G<sub>A</sub> structure

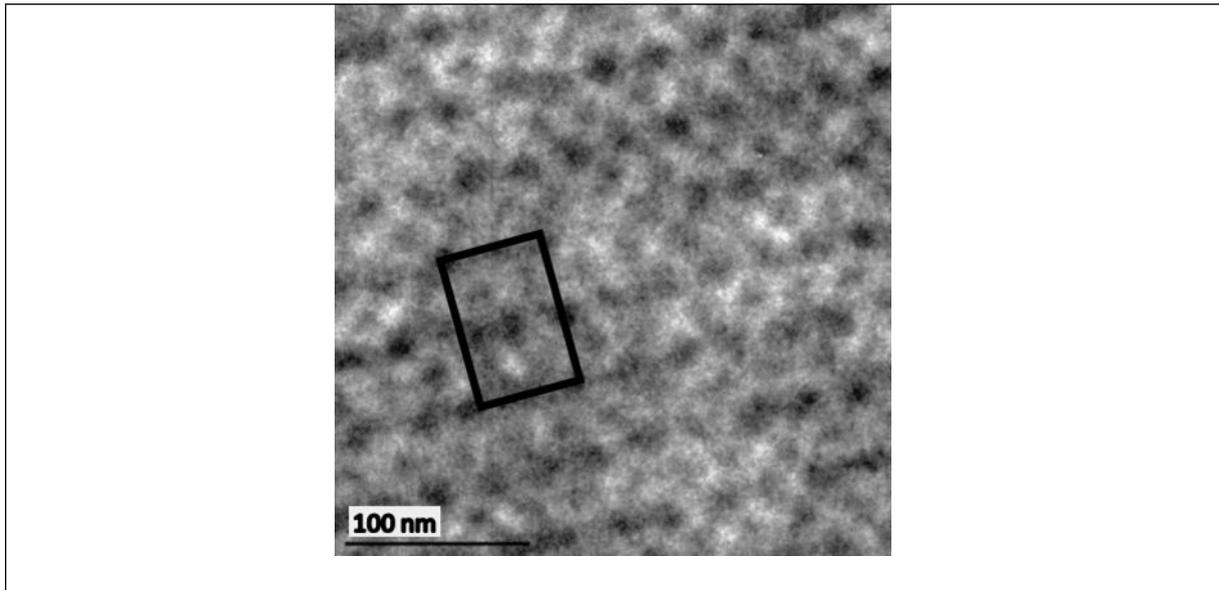


Figure SI-2: Top-view TEM image of a ISP thin film annealed for 4 hours and selectively stained by  $\text{OsO}_4$ . Rectangle shows the lattice unit.

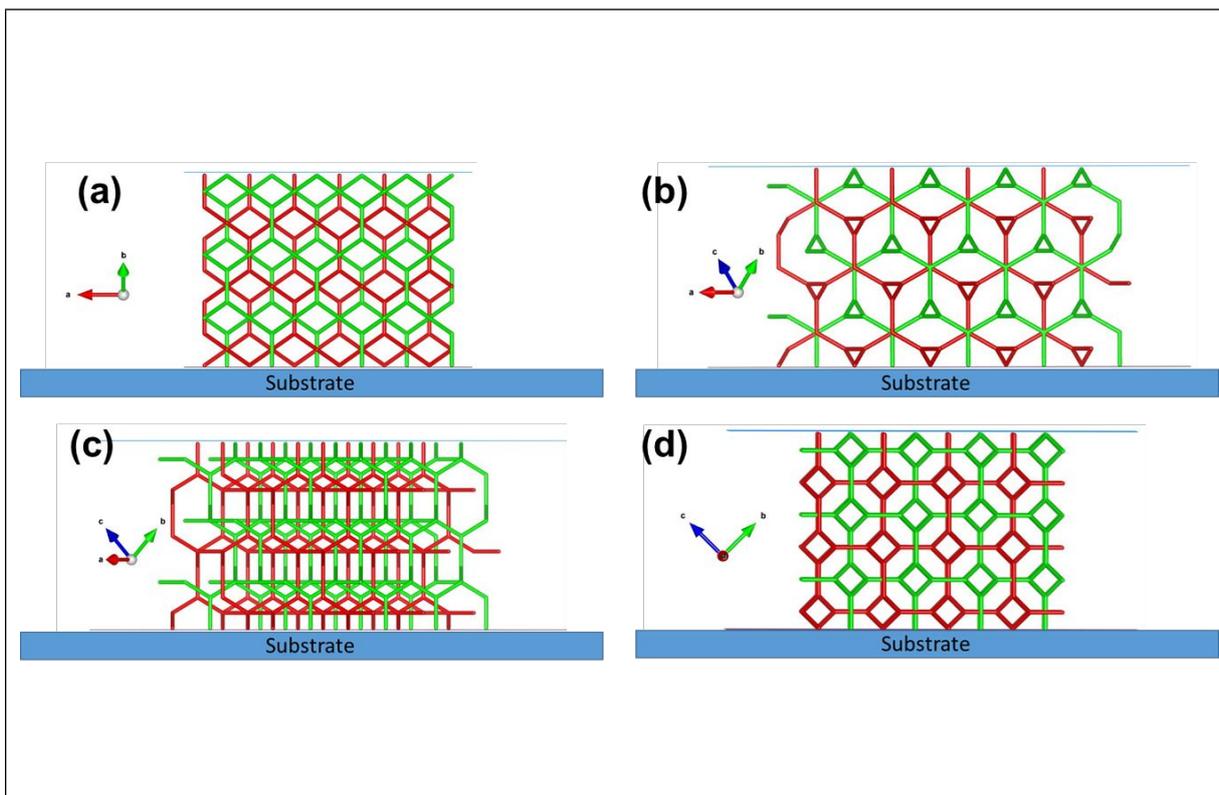


Figure SI-3: Side-view of different possible orientations of a  $G_A$  morphology having the (011) plane parallel to the surface following  $[01-1]$  (a),  $[11-1]$  (b),  $[21-1]$  (c),  $[100]$  (d) directions, assuming a cubic lattice where  $a = b = c$  and  $\alpha = \beta = \gamma = 90^\circ$ .

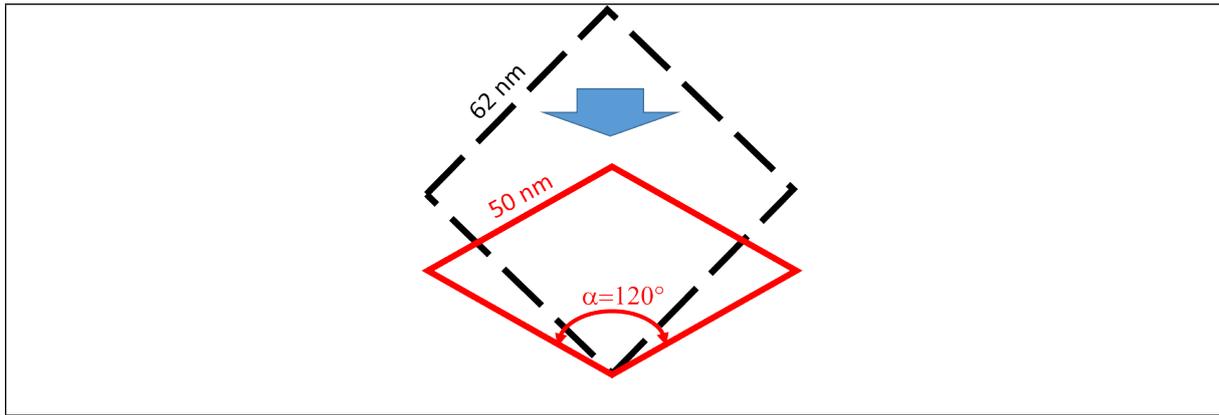


Figure SI-4: Schematic view of the deformation of the ideal cubic lattice into the actual lattice deformed during film drying.

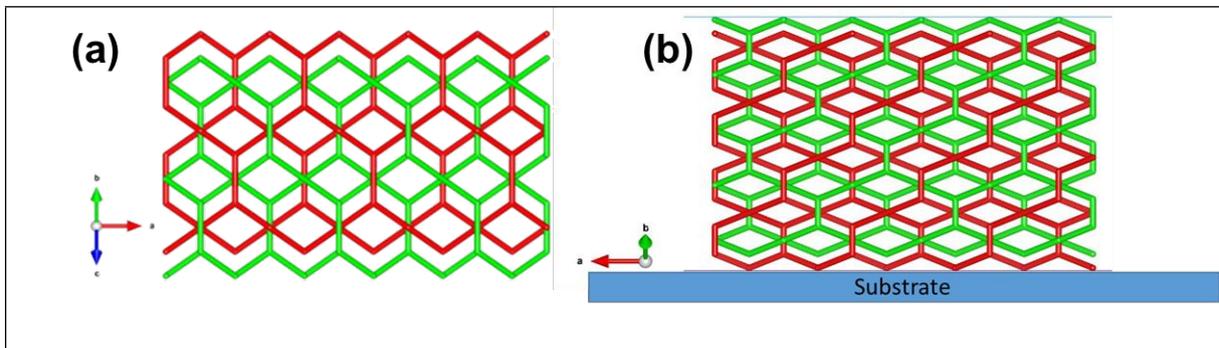


Figure SI-5: Actual top view (011) plane (a) and side view (100) plane (b) of the skeletal model of the deformed  $G_A$  structure.

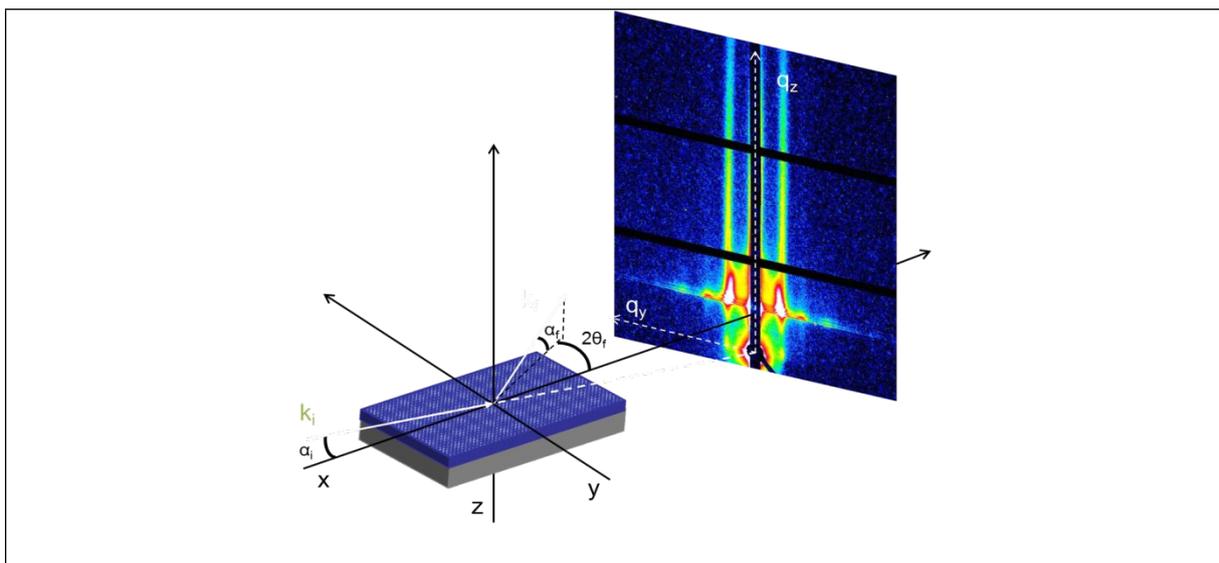


Figure SI-6: Configuration of the GISAXS experiment

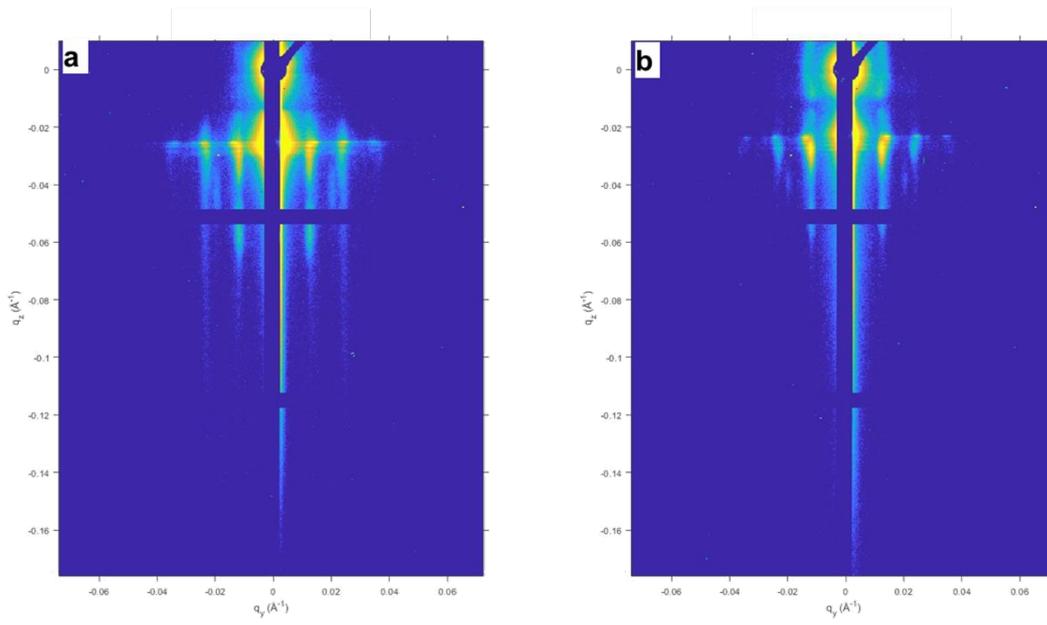


Figure SI-7: 2D GISAXS pattern of figure 3 after (a) UVO treatment and (b) staining by  $I_2$

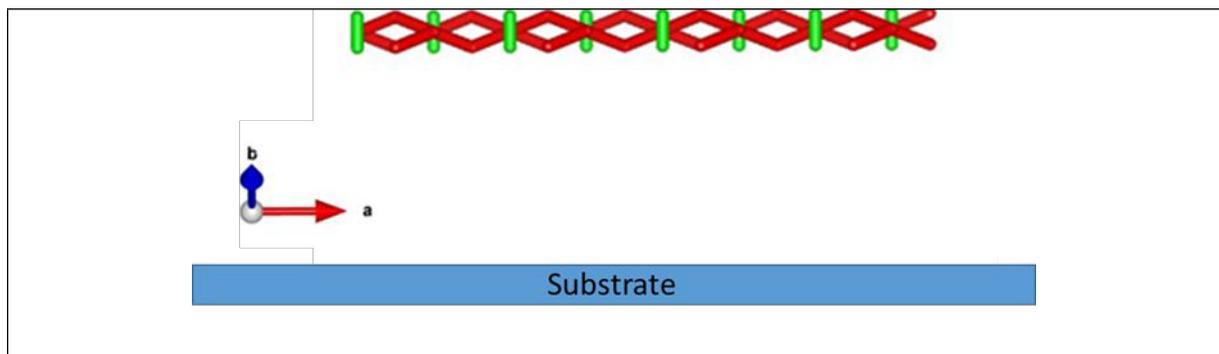


Figure SI-8: schematic side view image of the arrangement of the network restricted to the layer near the air surface (probed by AFM).

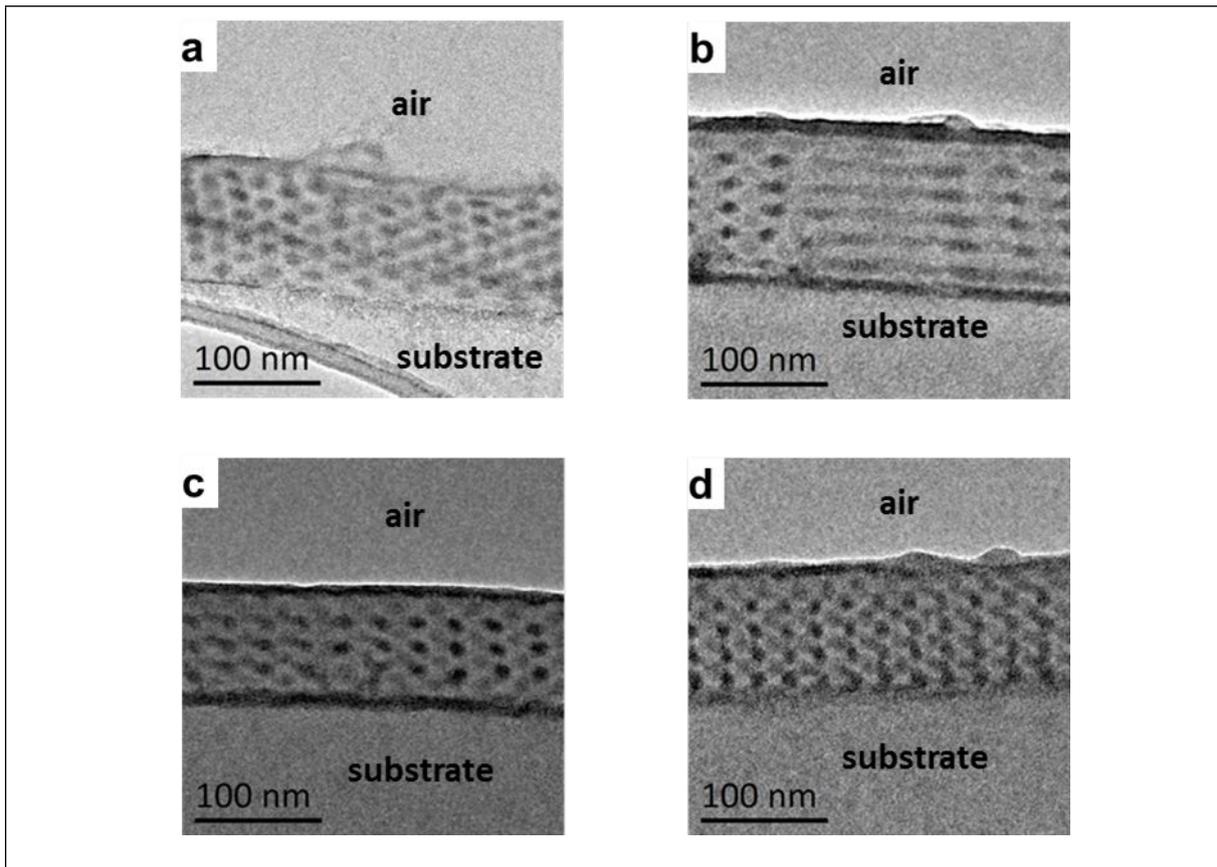


Figure SI-9: TEM cross-sectional images of solvent annealed (24 h) thin films after staining by  $\text{OsO}_4$  and  $\text{I}_2$ .

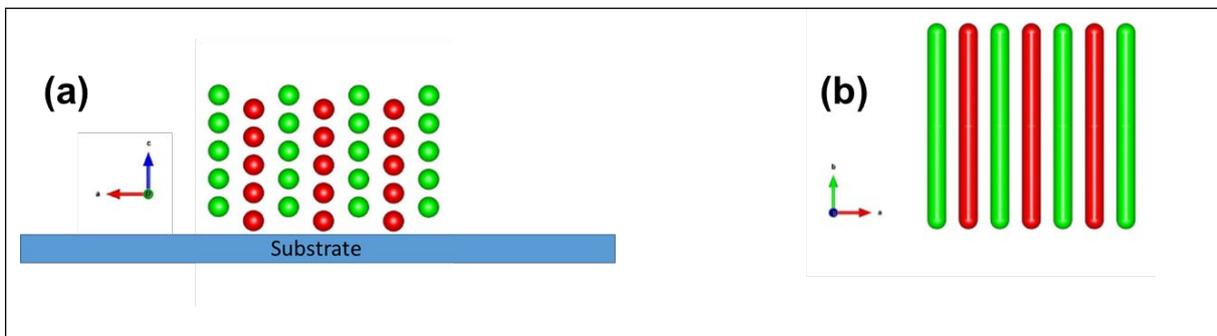


Figure SI-10: schematic representation of the cylindrical structure arranged in a  $P2_{1m}$  space group after transitioning from the  $G_A$  phase : side view ((010) plane)(a) and top view ((001) plane) (b). PI is in green and PVP in red .

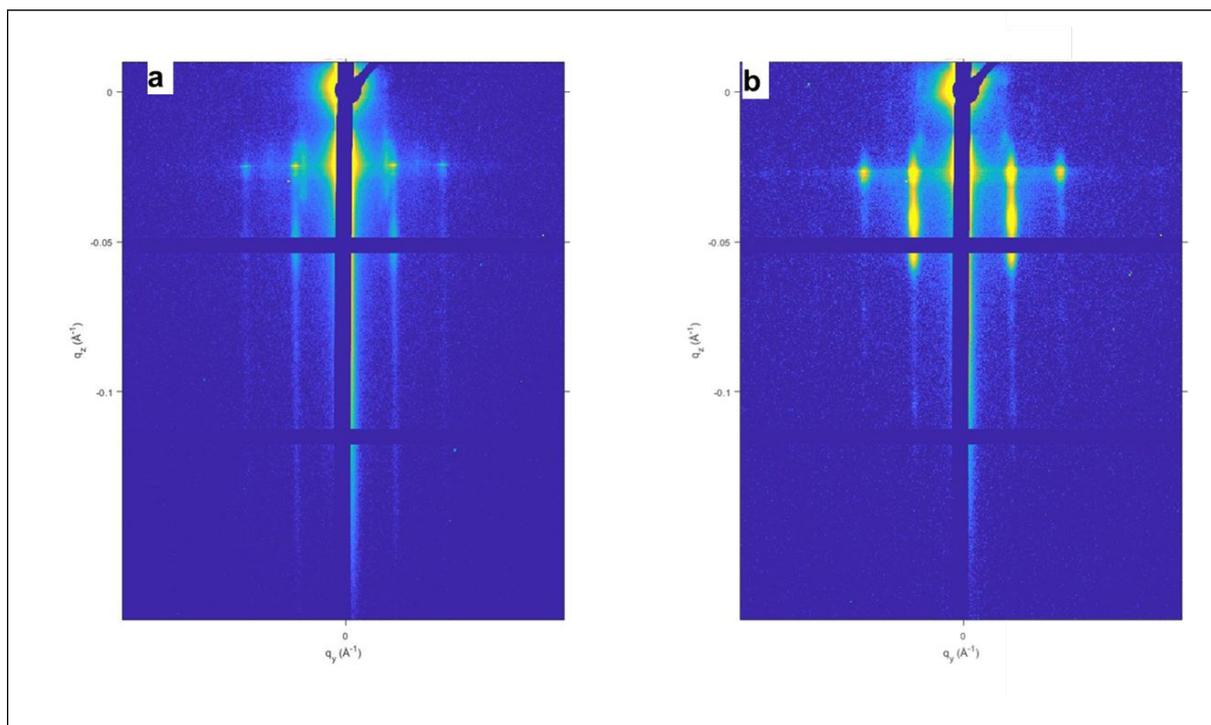


Figure SI-11: 2D GISAXS pattern of figure 6 (P2mm structure) after UVO treatment (a) and selective staining by  $I_2$  (b).

