

Supplementary Information

Solid Phase Crystallization of Amorphous Silicon at the Two-Dimensional Limit

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S11: Auger Spectra

S12: LEED Patterns below 1 Monolayer

S13: Methodology for Nominal Thickness

S14: Region of Interest with Si Pixels Merger

S15: Raman Analysis of Region of Interest

SI1: Auger Spectra of sample after 400 °C Annealing

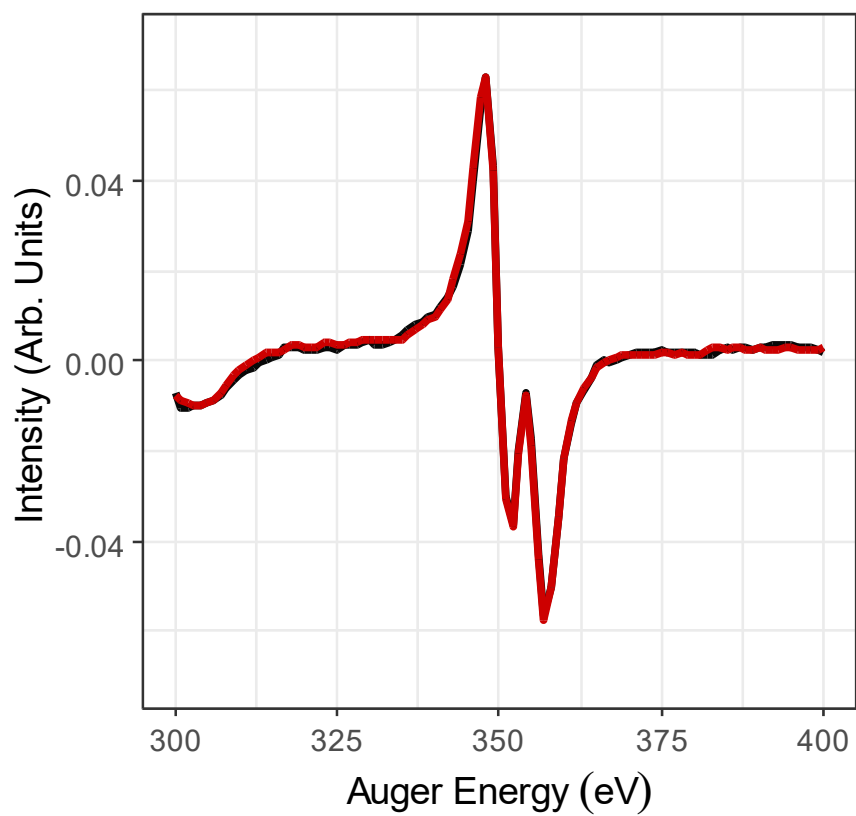


Figure S1: Auger spectra acquired on two different surfaces: (i) black before depositing Si (ref. main text **figure 1a**) and (ii) red after annealing deposited Si at 400 °C (main text **figure 1f**).

SI2: LEED Patterns below 1 Monolayer

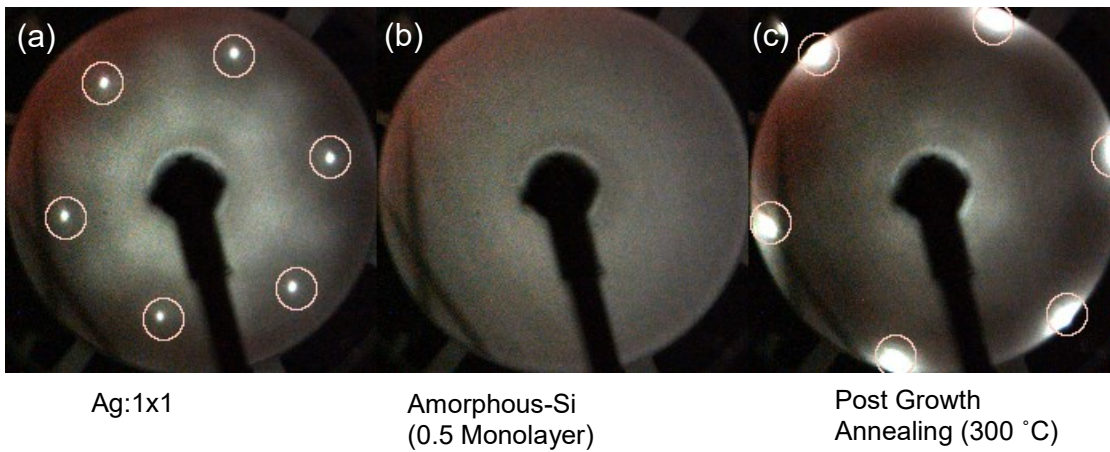


Figure S2: (a) Ag:1x1 surface post to preparation. (b) Amorphous-Si after depositing 0.5 monolayer of Si on Ag(111). (c) LEED patterns observed after heating surface in (b) at 300 °C for 15 minutes. Incident LEED Energies (E_i) for (a), (b) and (c) respectively are 90, 50 and 50 eV.

SI3: Methodology for Nominal Thickness

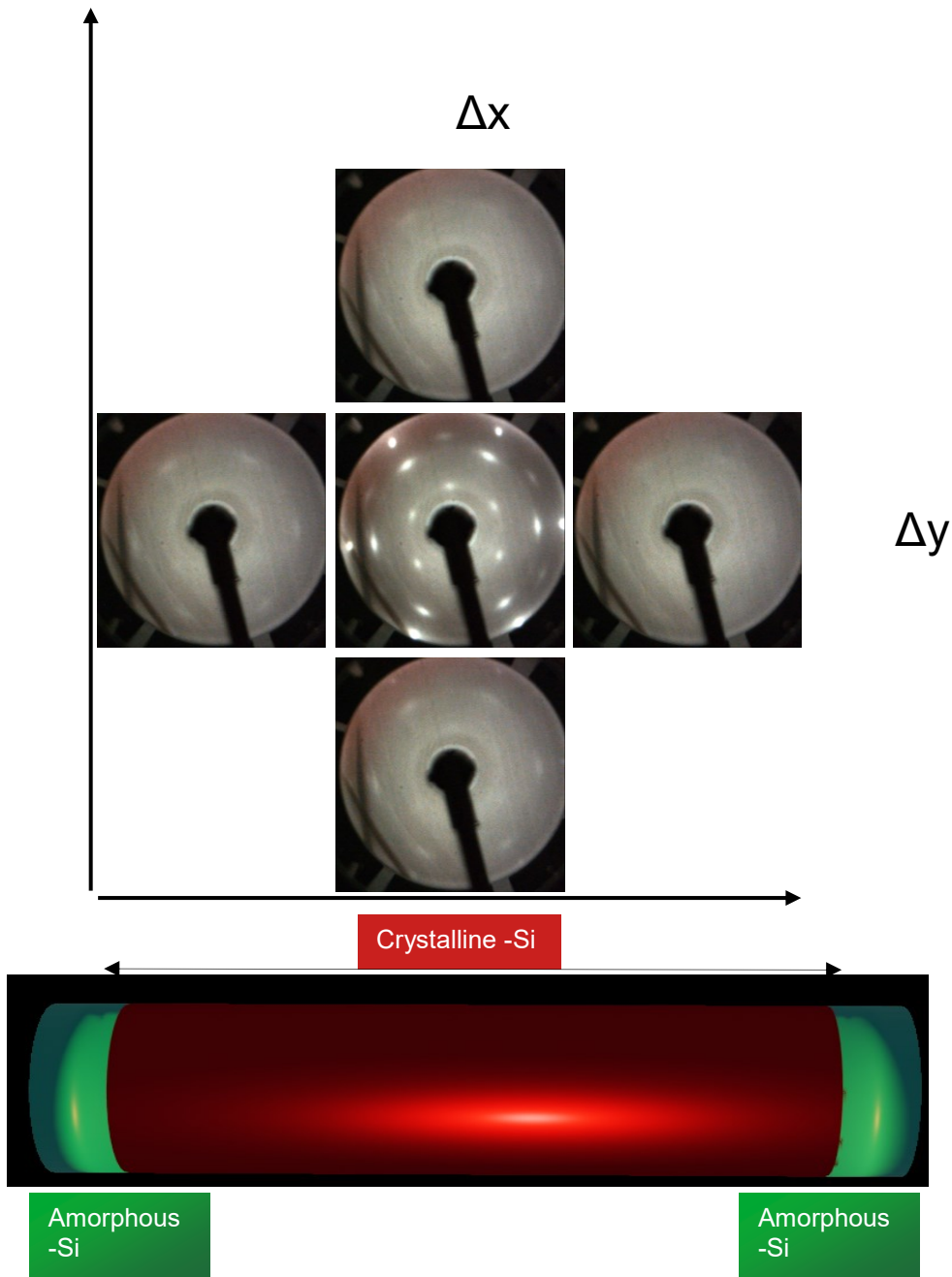


Figure S3: Methodology to determine nominal crystalline length with the help of manipulator. The manipulator is moved along in one axis at a time, either x or y (z is perpendicular to the sample surface) until amorphous region (green) appears at the end. This gives the crystalline length.

SI4: Region of Interest with Si-Pixels Merger

Region of Interest (ROI):
Merger of several 2D crystalline-Si pixels

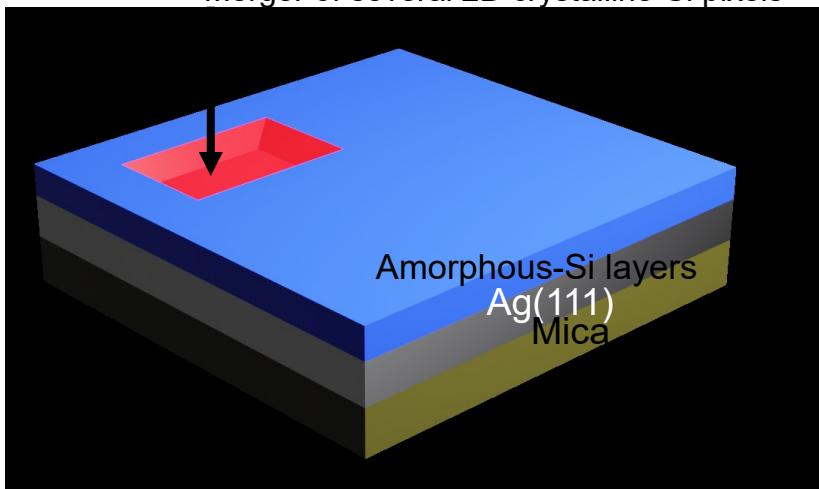


Figure S4: 3D sketch of Region of Interest (ROI) that was created on Amorphous-Si layers

SI5: Raman Analysis of Region of Interest

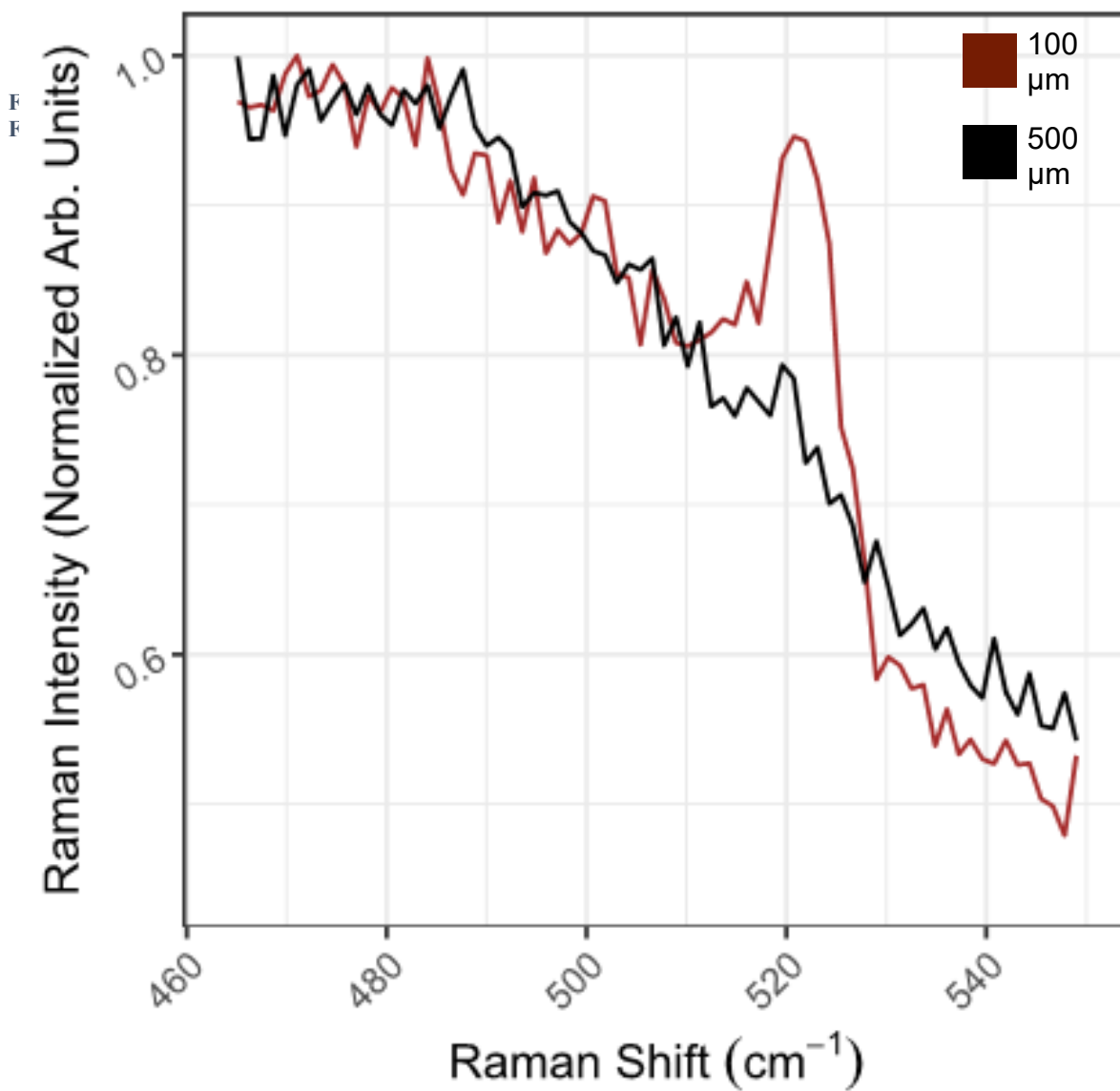


Figure S5a: Raman measurements while moving towards amorphous-Si side from crystalline-Si side.

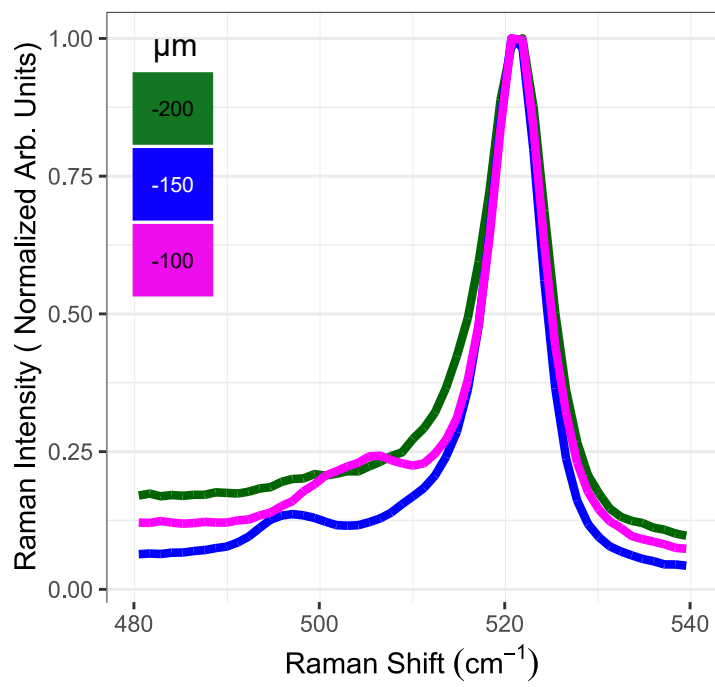


Figure S5b: Raman spectra at different positions between crystalline and amorphous-Si interface at Region of interest (figure S4). (D=-50 μm; purple), (D=-100 μm; orange), (D=-150 μm; magenta) and (D=-200 μm; black). Crf: **Figure 5** (main text)

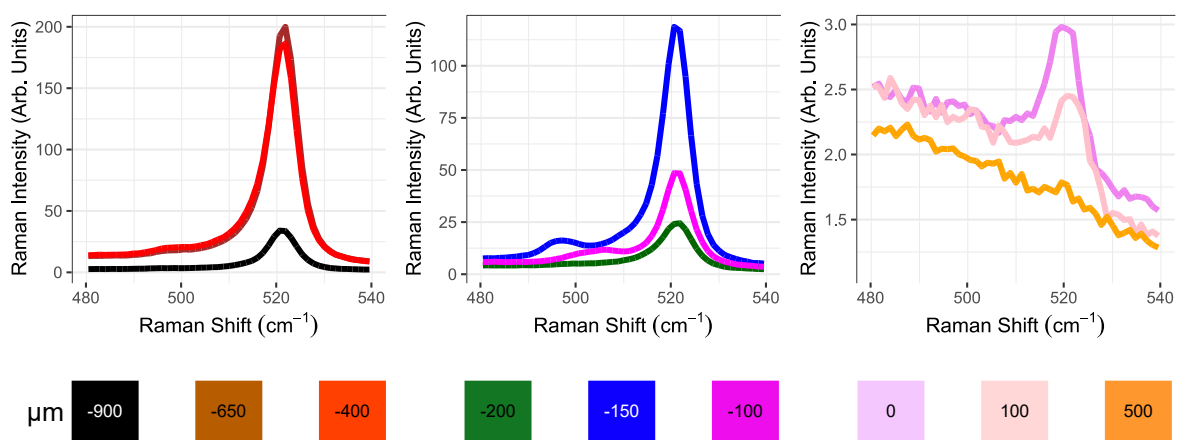


Figure S5c: As acquired Raman spectra along a scan while moving from crystalline (left) to amorphous region (right) at Region of Interest (figure S4). Cfr. Figure 5 (main text).