Supplementary Material to the article “Silicene growth by molecular beam epitaxy on CaF$_2$/Si(111) substrates modified by electron irradiation”

The Raman spectra were recorded at room temperature in the backscattering mode of measurements. For excitation, we used the Ar+ laser line at the wavelength 514.5 nm. The measurements were carried out with a T64000 (Horiba Jobin Yvon) spectrometer. The spectral resolution was no worse than 2 cm^{-1}. For detection, we used a silicon matrix of photodetectors cooled with liquid nitrogen. The laser beam power at the sample surface was 2–3 mW. The sample morphology was studied with atomic force microscope (Solver Pro NT-MDT) in a taping mode.

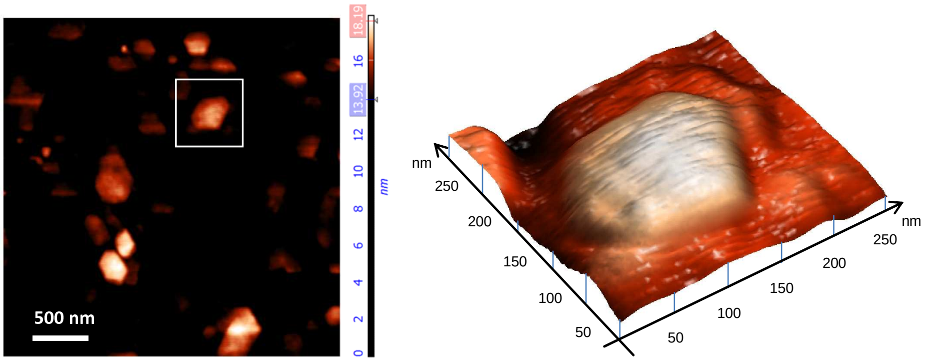

Fig. S1. (a) - Atomic force microscopy (AFM) scan image of the sample area 3μm × 3μm after Si deposition (10 MLs). The selected height range is shown on the scale panel on the right side of the AFM scan image; (b) - 3D image of selected square area (250 nm × 250 nm).

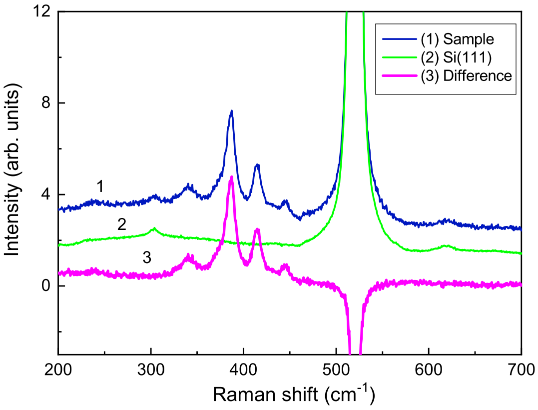

Fig. S2. Raman scattering spectra of the template sample, represented the electron beam modified CaF$_2$/Si(111) substrate, and Si(111) substrate. To verify the presence of the signal at 495 cm^{-1} we subtracted one spectrum from the other.

Fig. S1 (a,b) shows the results of atomic force microscopy study of the sample morphology after Si deposition on the electron beam modified CaF$_2$/Si(111) substrate. We have chosen a height range so that the silicene islands would be distinguishable.

Fig. S2 shows Raman scattering spectra of the template sample, represented the electron beam modified CaF$_2$/Si(111) substrate, and Si(111) substrate. The difference spectrum shows no singularities in the vicinity of 495^{-1} cm.