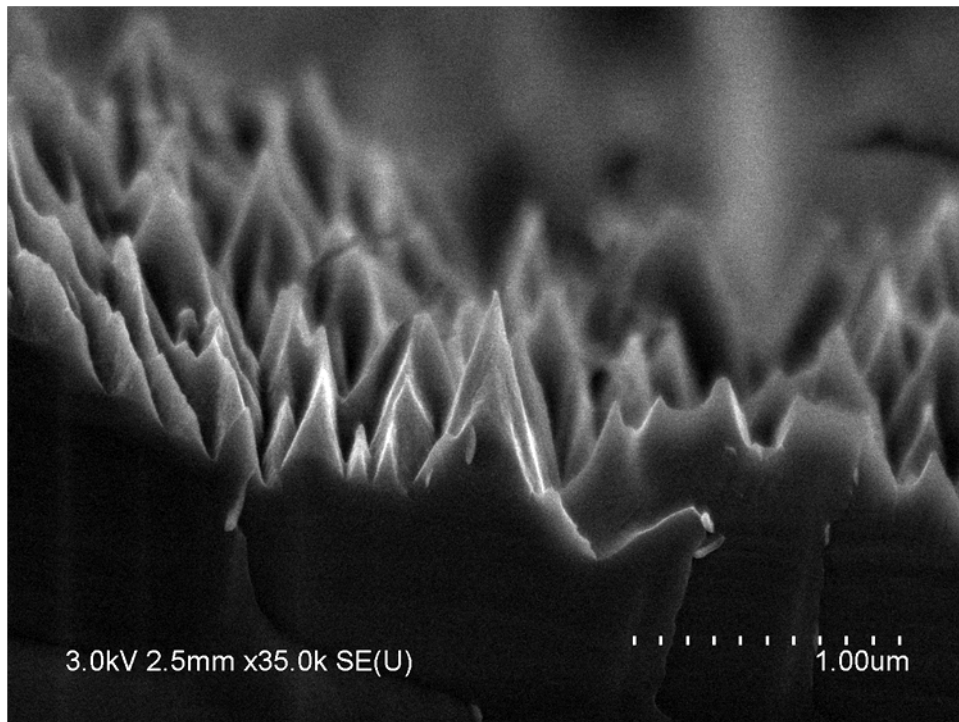


Dry etching, cleaning & texturing research at the LPICM and in PVSIXT

In the next decade, high efficiency solar cells and especially based on n-type monocrystalline wafers will take a bigger share of the PV market. Furthermore, in order to reduce the cost of the produced Watt-hour, the thickness of the wafers will still decrease to reach around 120 μm for monocrystalline technologies. With the wafer thickness reduction, some process steps should be adapted. Especially wet processes, used for etching & cleaning, are expected to provoke an increased breakage of wafers. Therefore, alternative processes such as dry techniques are investigated with different targets:

- Texturing: light trapping improvement and process simplification for cost reduction (e.g. black Silicon obtained by Reactive Ion Etching or Tailored Voltage Waveform)
- Cleaning & surface treatment: surface preparation such as native oxide etching or surface preparation before epitaxy (H_2 plasma...)
- Etching: boron or phosphorus silicate glass etching or saw damage removal by PECVD



Black silicon obtained by RIE of SF_6/O_2 plasma