processes

Supplementary Materials: Fabrication and Characterization of Hydrophobic Porous Metallic Membranes for High Temperature Applications

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EDS and WDS Analyses

Table S1. Average EDS Results for the Si-DLC layer on a porous SS substrate. Probe positions see Figure S 1.

Substrate material	C / wt%	O / wt%	F / wt%	Si / wt%
Homogeneous coating	51.11	24.54	-	24.34

For the quantitative characterization of the fluor-containing coating (FAS) by means of EDS analysis, the results on the FAS coated silicon wafer are shown, to avoid the overlapping of the Fe and F peaks, when analysing a SS probe.

Table S2. Exemplary EDS results for an FAS coated silicon wafer (including substrate). Probe positions see Figure S 1.

Substrate material	C / wt%	O / wt%	F / wt%	Si / wt%
FAS coated [002]	1.63	0.28	0.21	97.88
FAS coated (agglomeration) [001]	7.20	0.76	1.45	90.59

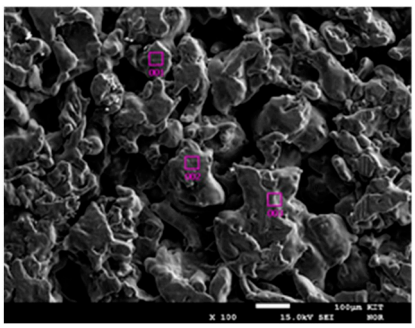
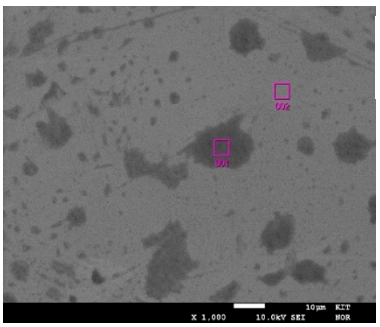
(a)  (b) 

Figure S1. Probe positions marked for EDS analysis of (a) Si-DLC layer on a porous SS substrate; (b) FAS coated silicon wafer (including substrate).

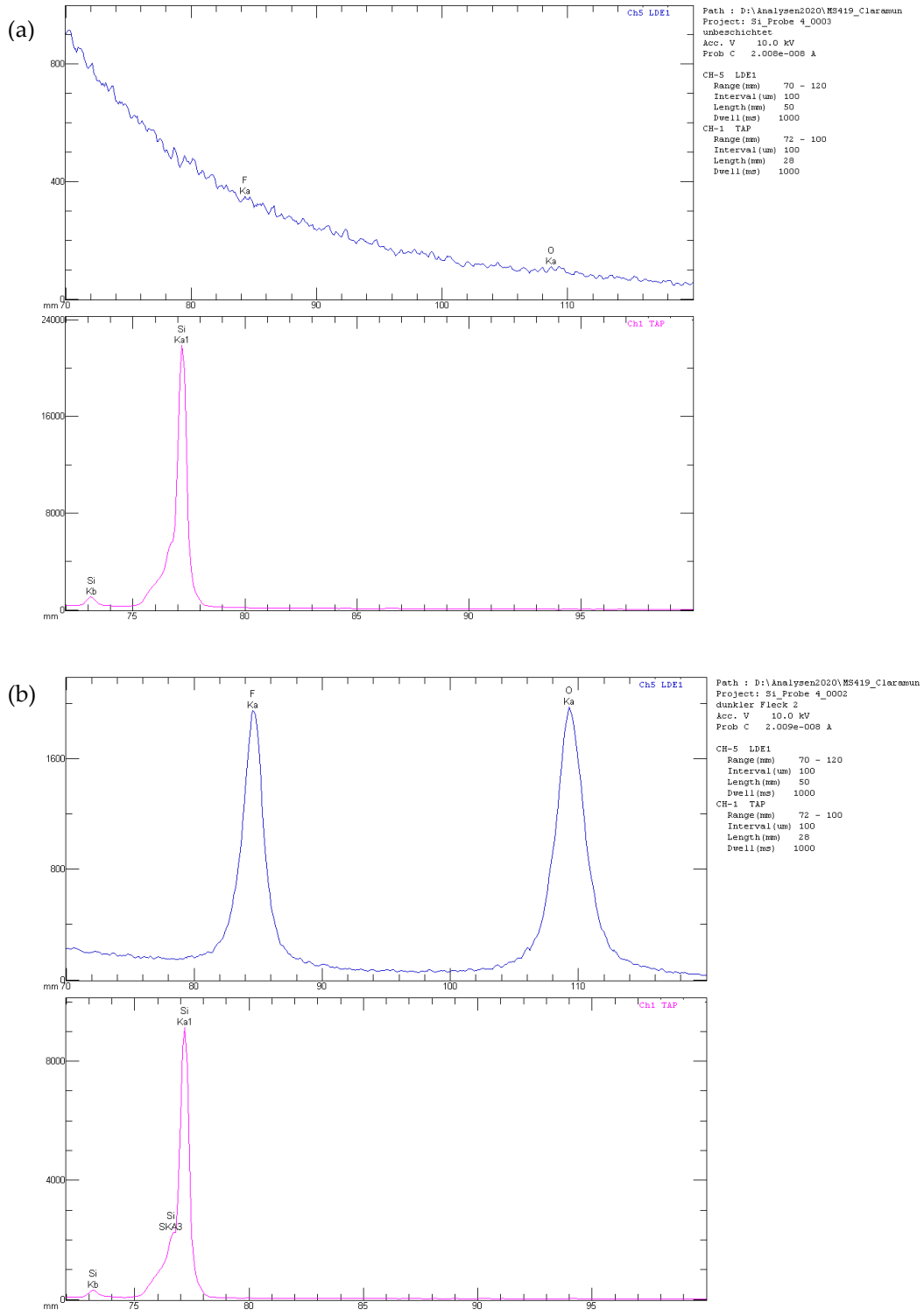


Figure S2. WDS analysis of (a) uncoated silicon wafer, showing the absence of O and F (no peaks); (b)FAS coated silicon wafer, showing the presence of Si, O and F in the layer, corresponding to Figure S 1.

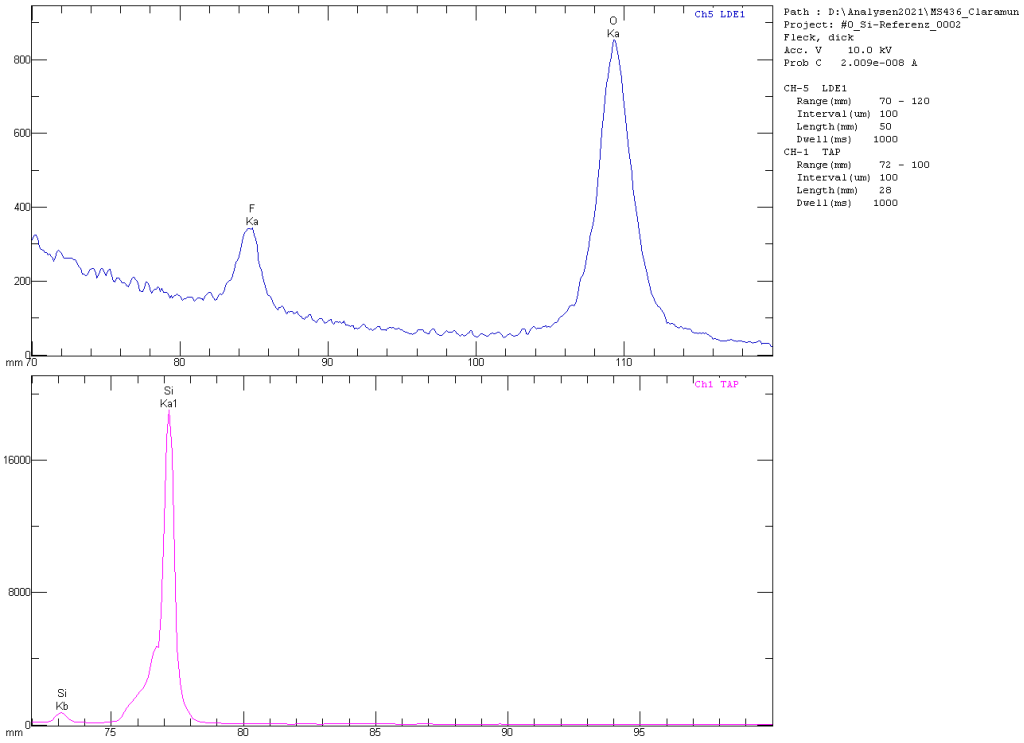


Figure S3. WDS Analysis of the FAS coated silicon wafer after 350°C heating stage, corresponding to sample in Figure S 4.

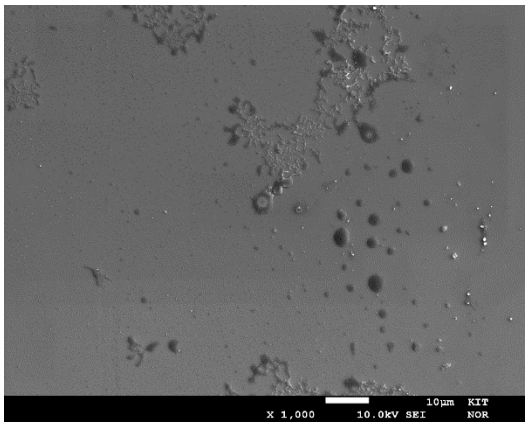


Figure S4. SEM Picture of the FAS coated silicon wafer after 350°C heating stage.

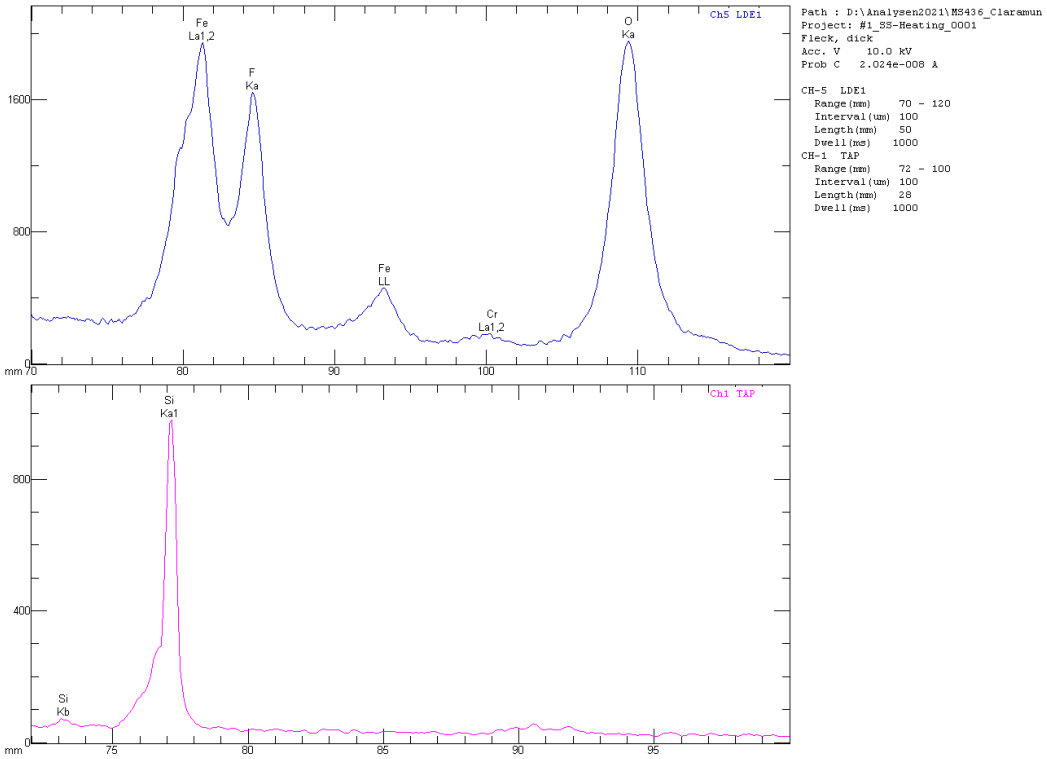


Figure S5. WDS Analysis of the FAS coated flat SS substrate after the 280°C heating stage corresponding to the sample of Figure S 6, showing still qualitatively the presence of the layer elements.

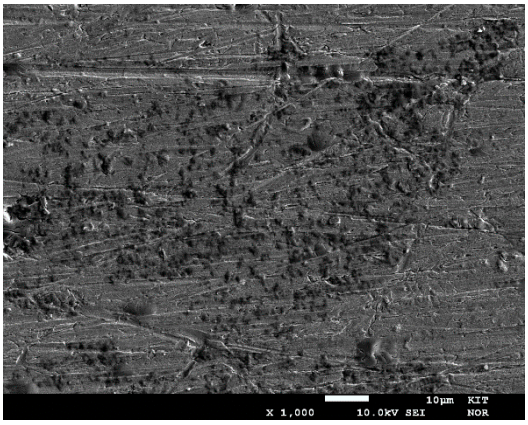


Figure S6. SEM Picture of the FAS coated flat SS substrate after the 280°C heating stage.

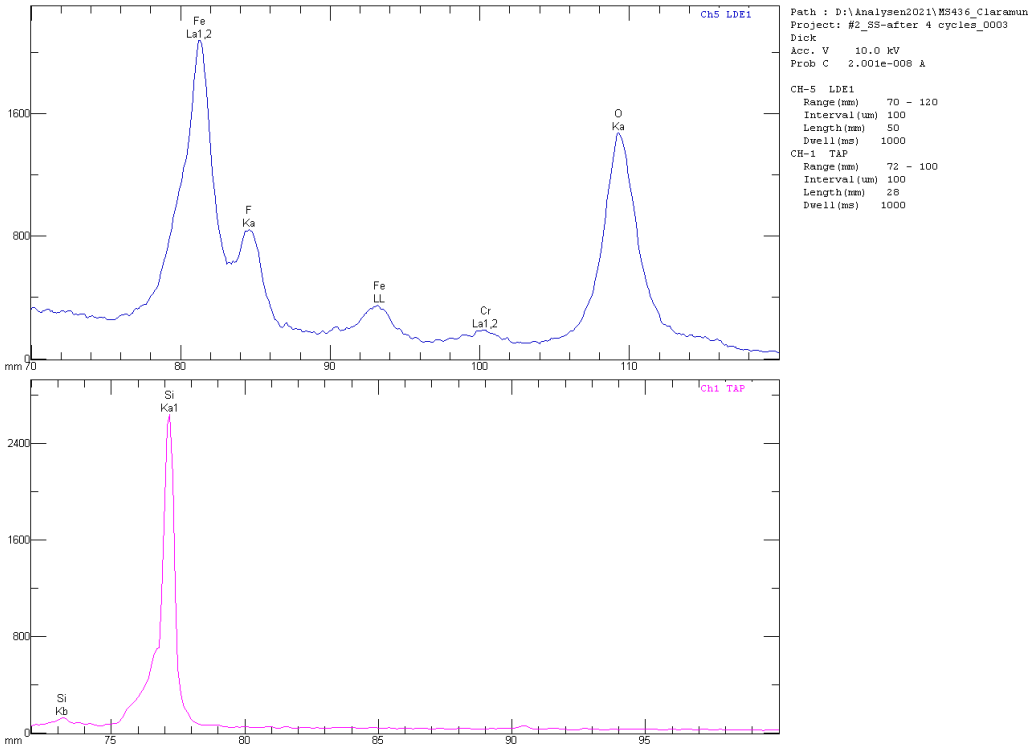


Figure S7. WDS Analysis of the FAS coated flat SS substrate after 4 heating cycles at 250°C corresponding to the sample of Figure S 8, showing the presence of the layer elements.

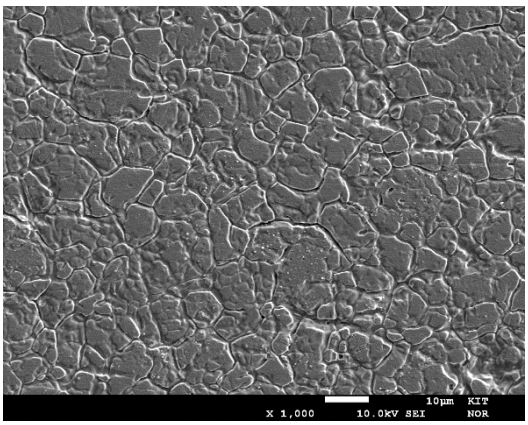


Figure S8. SEM Picture of the FAS coated flat SS substrate after 4 heating cycles at 250°C.

Surface roughness analysis

Table S3. Average 3D surface texture parameters according to ISO 25178[34], performed with confocal microscopy

Substrate	Sa / µm	Sq / µm	Sz/ µm
non-coated SS flat	9.8314	11.762	113.38
non-coated SS fine porous	11.154	13.733	122.44

Sa=arithmetical mean height of the surface; Sq=root mean square height of the surface; Sz=maximum height of the surface .

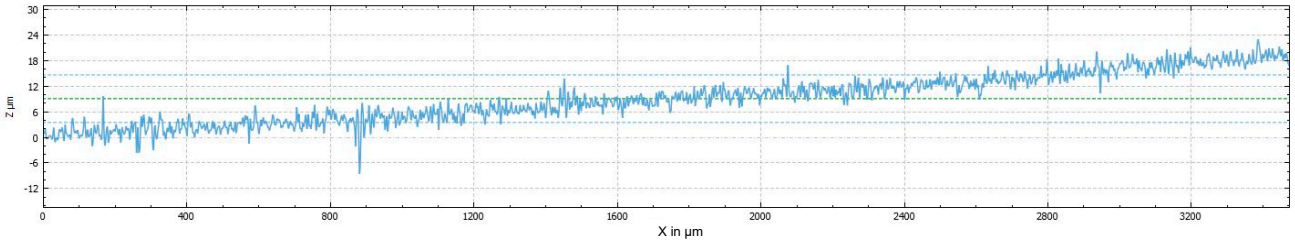


Figure S9. Exemplary surface height profile of the flat SS substrate (non-coated)

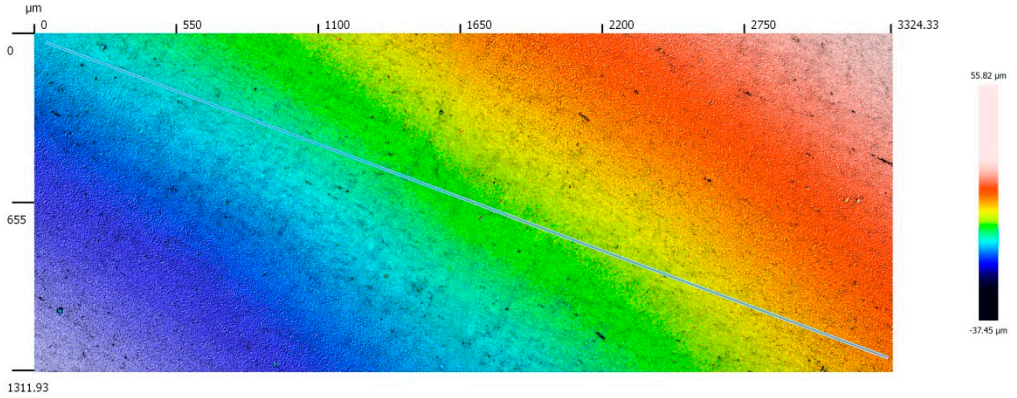


Figure S10. Confocal image of a flat SS substrate (non-coated) corresponding to the height profile in Figure S 9

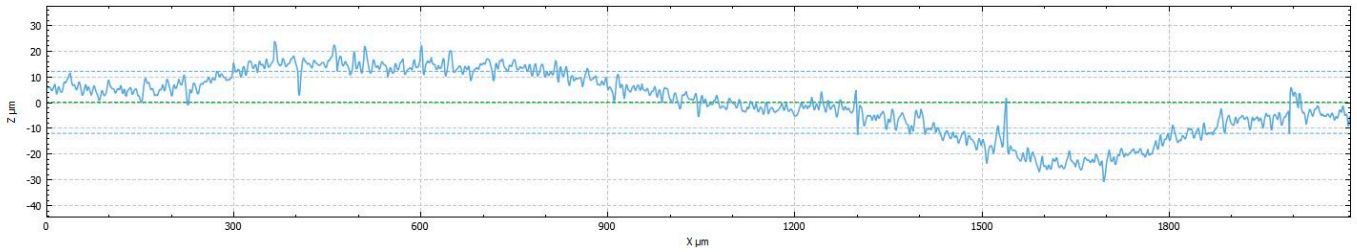


Figure S11. Exemplary surface height profile of the fine porous SS substrate (non-coated)

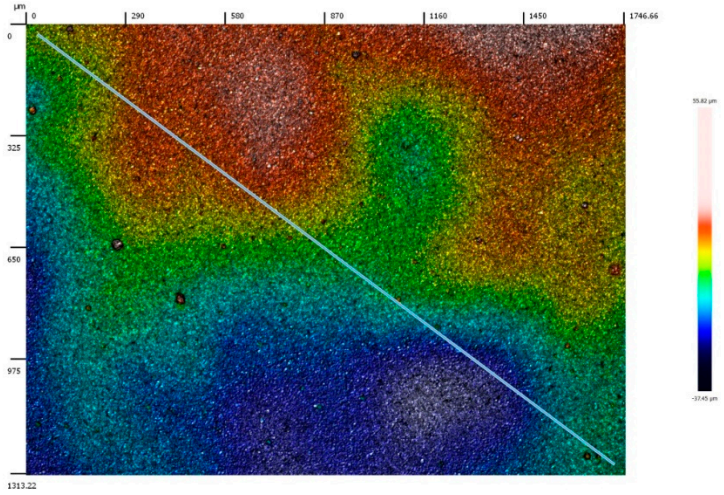


Figure S12. Confocal image of a fine porous SS substrate (non-coated) corresponding to the height profile in Figure S 11