

Figure. S1 EDS mapping images of different samples, (a) the un-grafted sample A5, (b) the grafted sample A5, (c) the grafted sample A6, (a) the grafted sample A8.

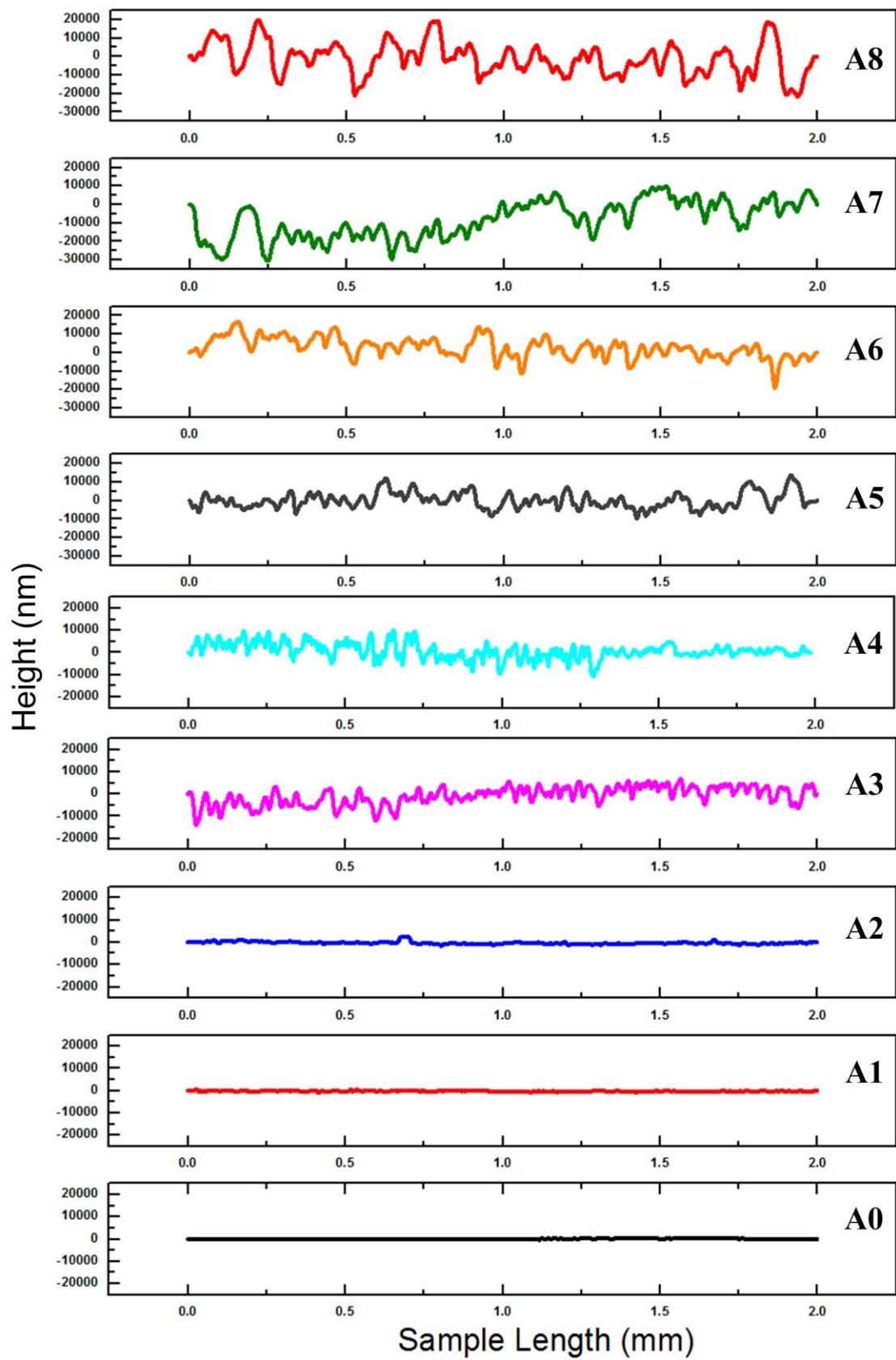


Figure .S2 Surface roughness profile curves of various samples.

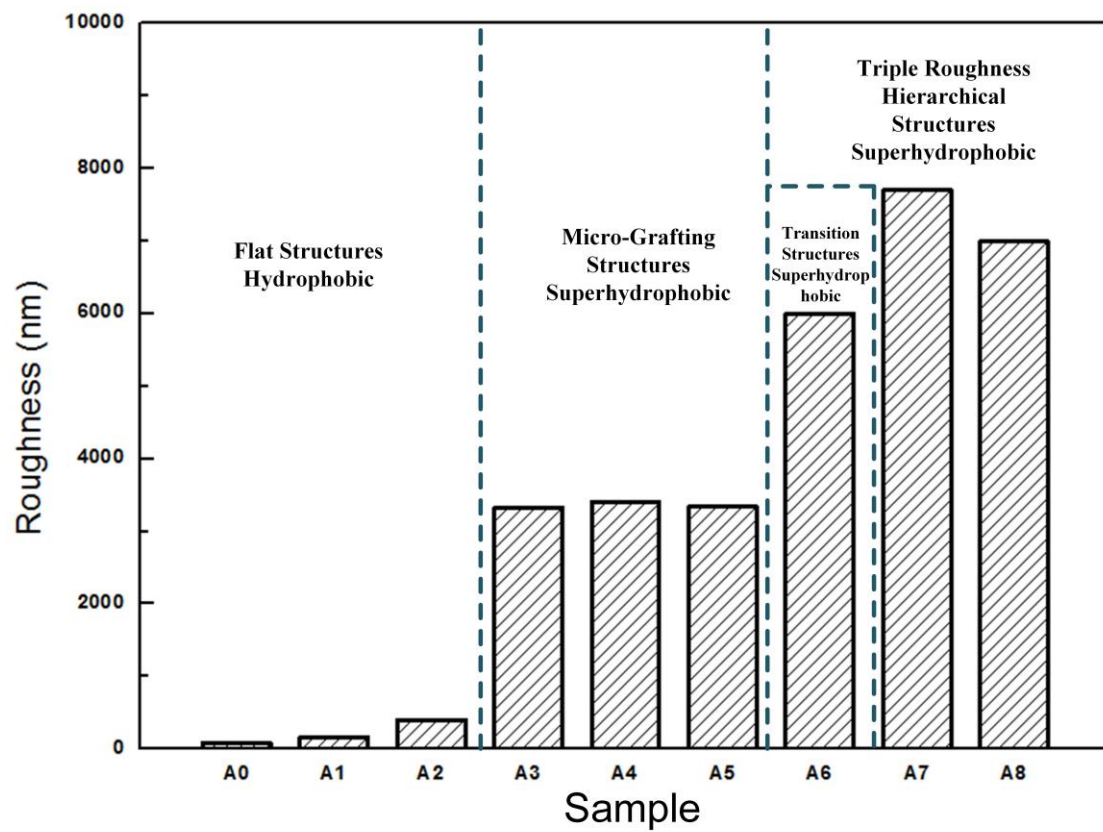


Figure. S3 A histogram of roughness in A series

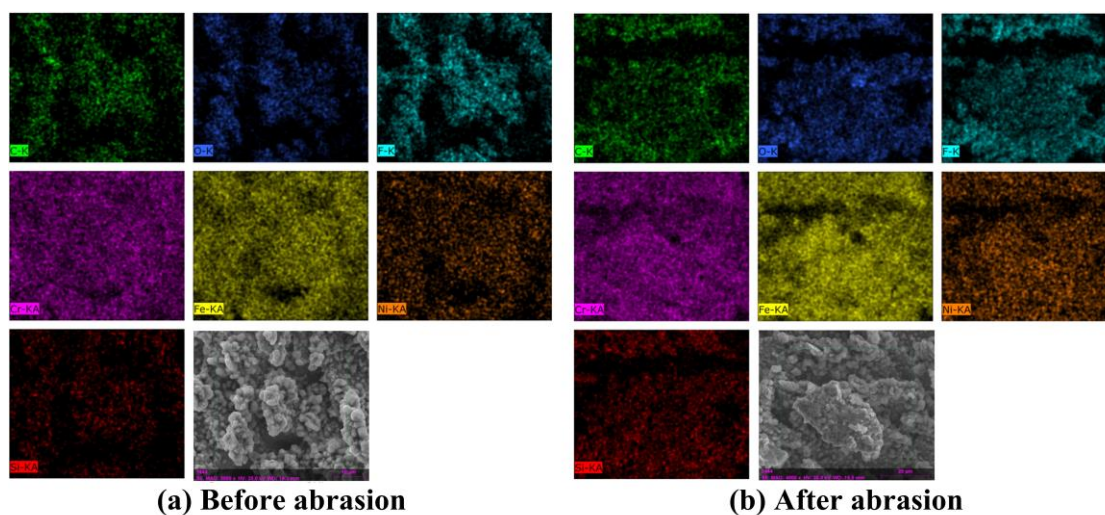


Figure. S4 chemical components of sample before/after abrasion 2.0 m at the applied pressure of 2.5 kPa, (a) before abrasion and (b) after abrasion.

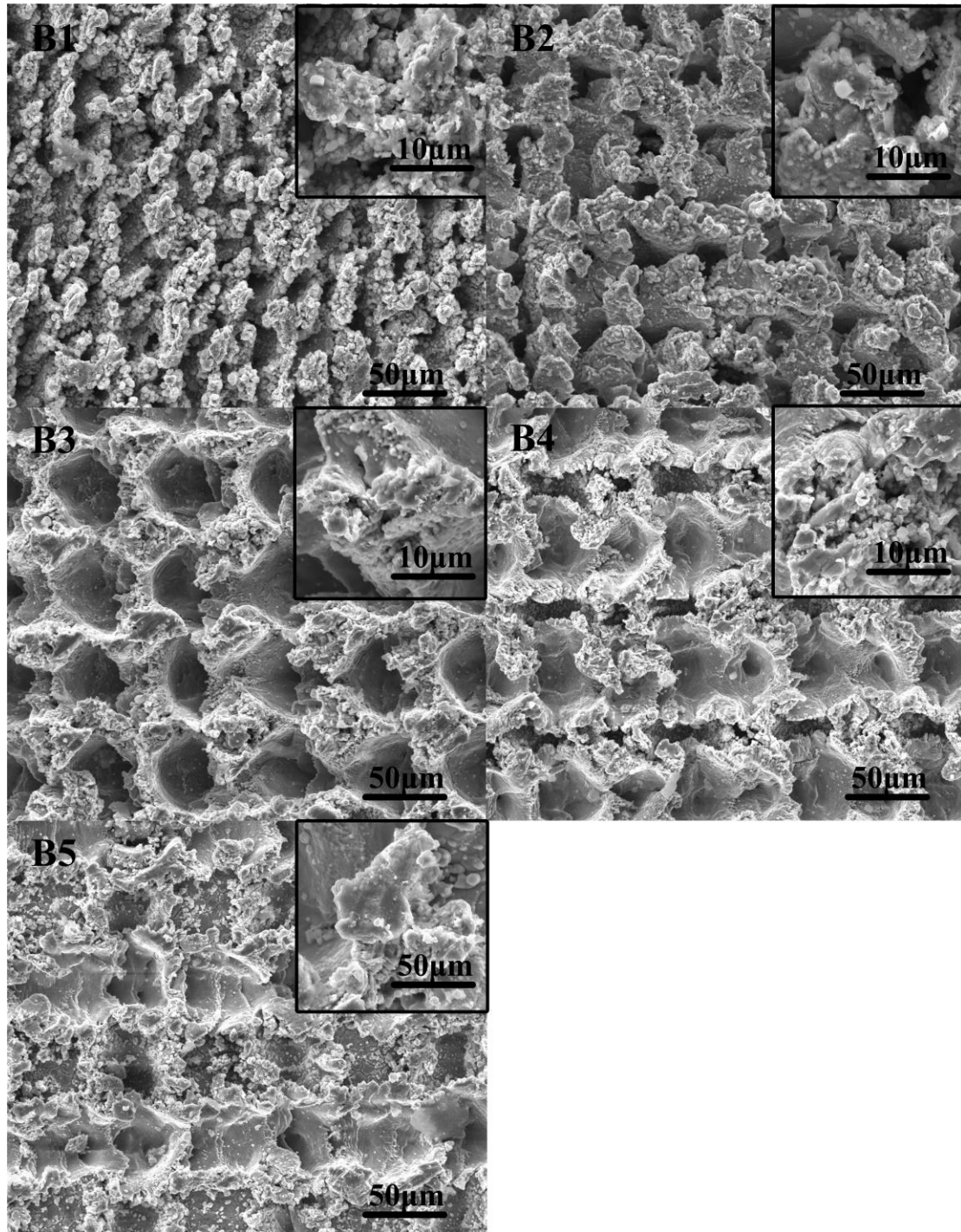


Figure. S5 SEM images of the abraded B series superhydrophobic surface after abrasion 2.5 m at the applied pressure of 12.5 kPa.

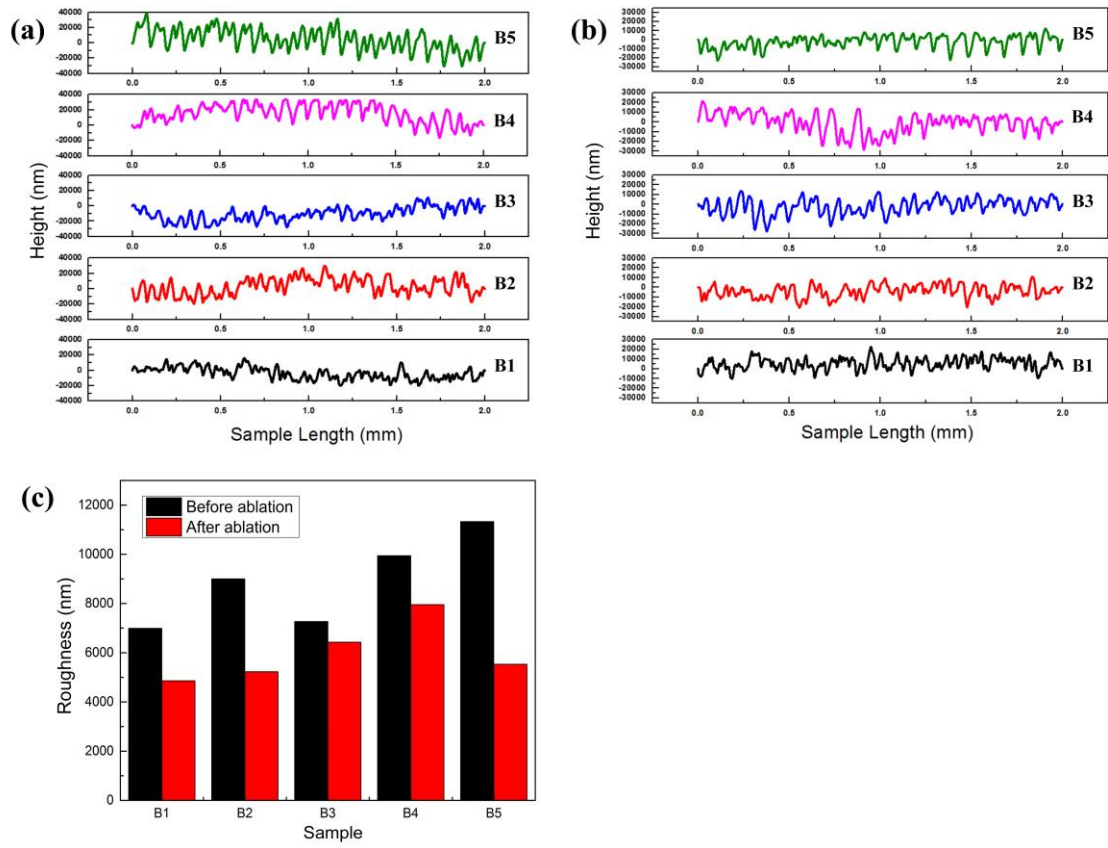


Figure. S6 Surface roughness profile curves of B series samples, (a) before abrasion, (b) after abrasion, (c) a histogram of surface roughness of samples B series.

Table. S1 the quantitative analysis result of chemical compositions of sample before/after abrasion

Elements	Before abrasion (%)	After abrasion (%)
C	15.28	16.16
O	11.62	11.29
F	15.74	13.77
Cr	9.64	10.03
Fe	42.1	42.70
Ni	4.97	5.47
Si	0.65	0.58

Table. S2 the quantitative analysis result of chemical compositions of B series sample after abrasion.

Elements	B1 (%)	B2 (%)	B3 (%)	B4 (%)	B5 (%)
C	10.27	7.82	8.59	7.93	8.29
O	15.29	14.76	14.22	15.68	11.27
F	6.00	1.54	2.38	1.65	1.08
Si	0.61	0.41	0.42	0.4	0.38