

Supplementary materials: Deposition of Stainless Steel Thin Films: An Electron Beam Physical Vapour Deposition Approach

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SEM images of the Stainless steel evaporant source and deposited thin films:

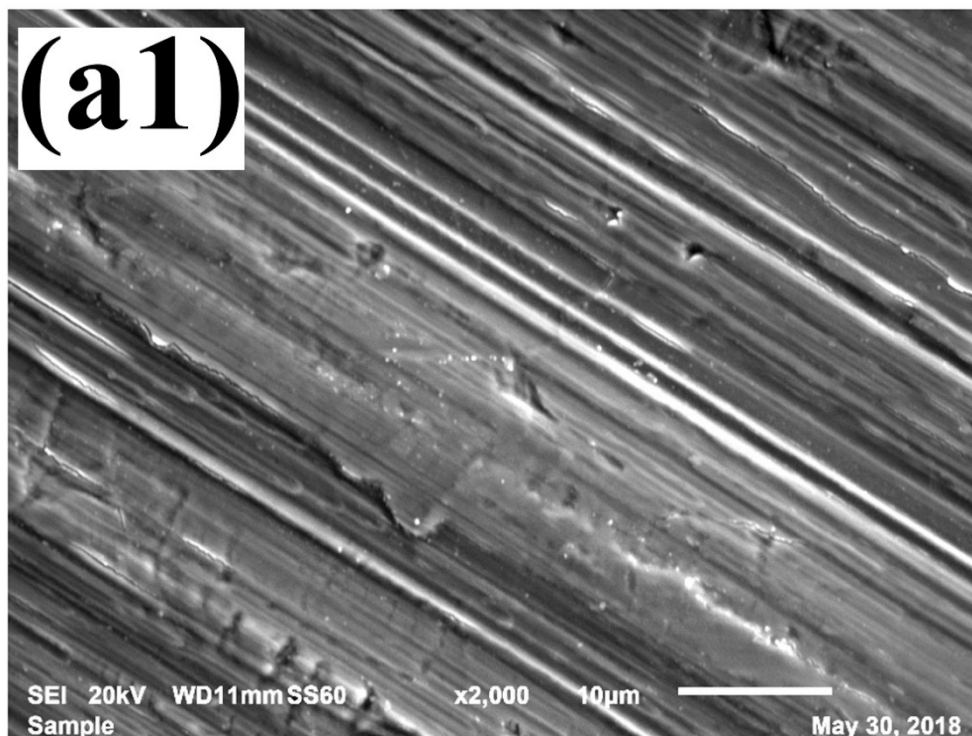


Figure S1. (a1) SEM image of the 0.05 Å/s deposited film.

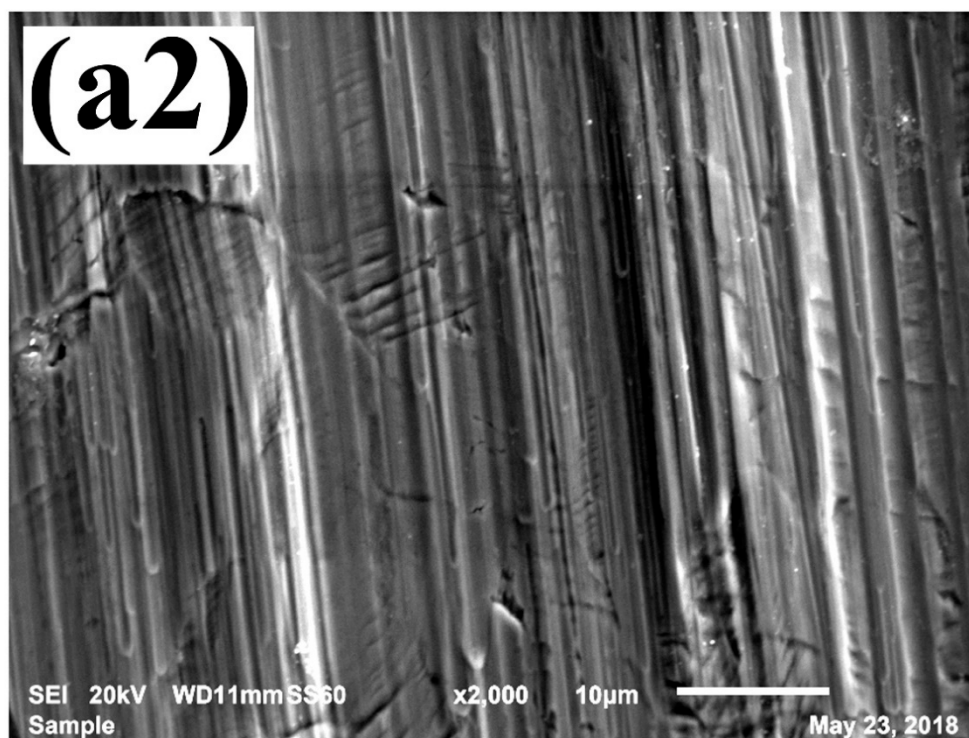


Figure S1. (a2) SEM image of the 0.16 Å/s deposited film.

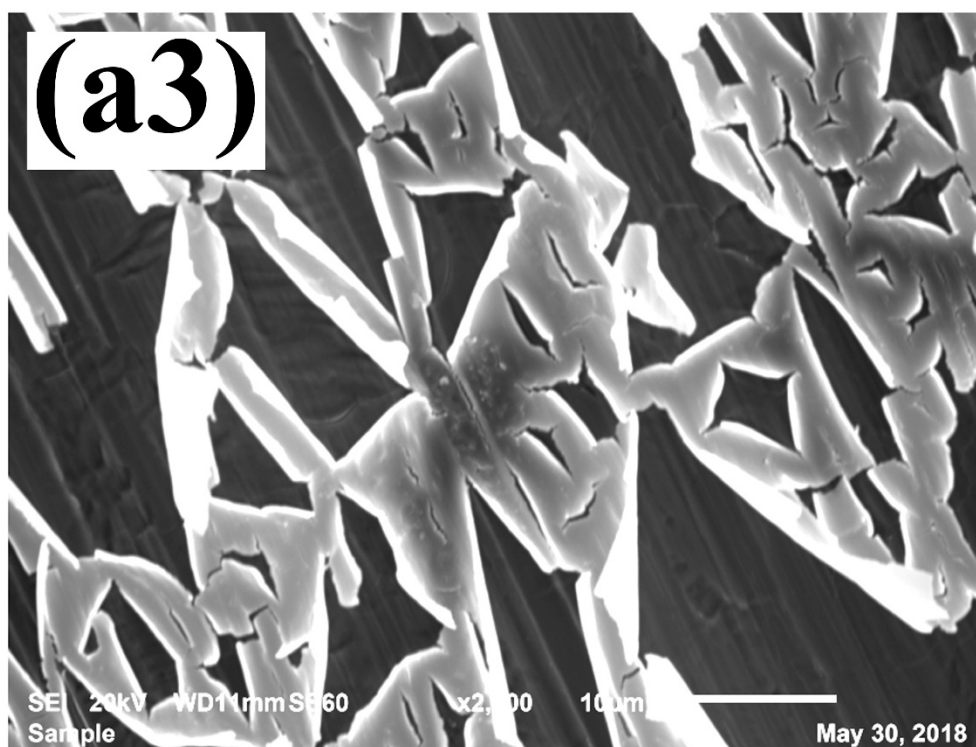


Figure S1. (a3) SEM image of the 0.82 Å/s deposited film.

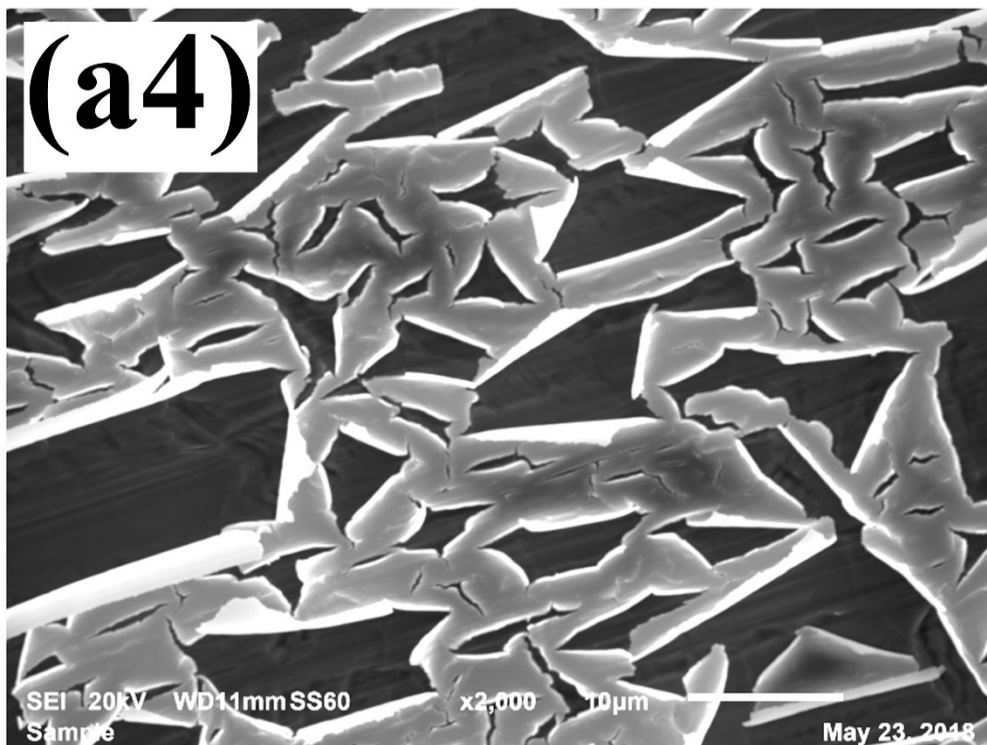


Figure S1. (a4) SEM image of the 1.07 Å/s deposited film.

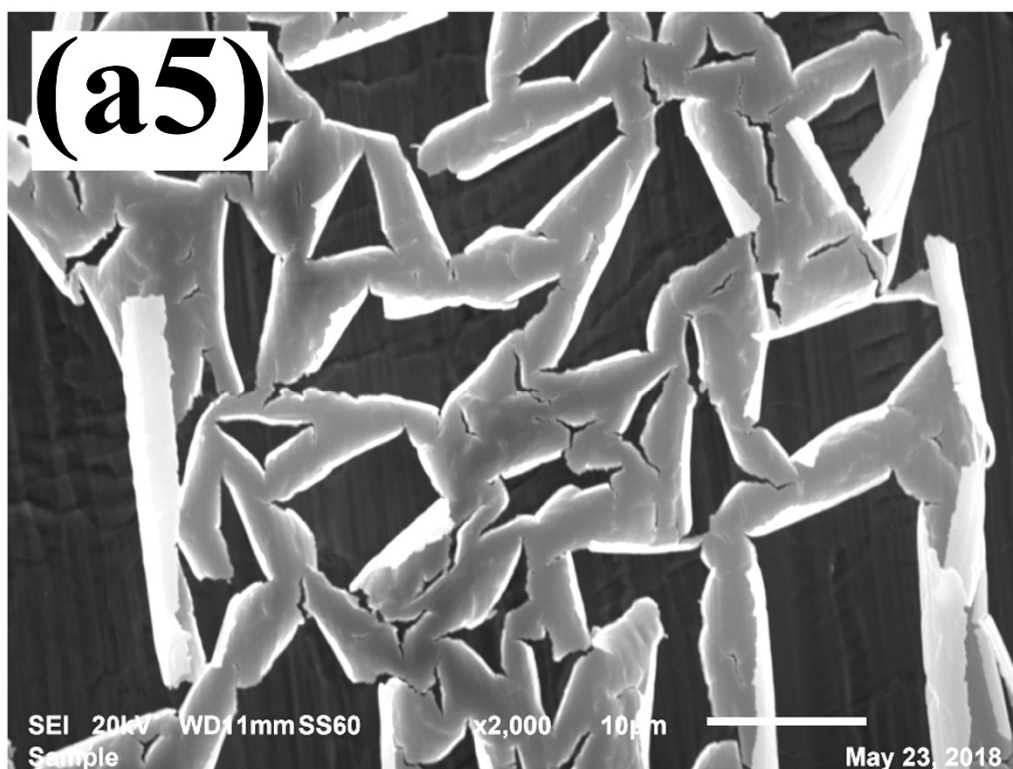


Figure S1. (a5) SEM image of the 1.45 Å/s deposited film.

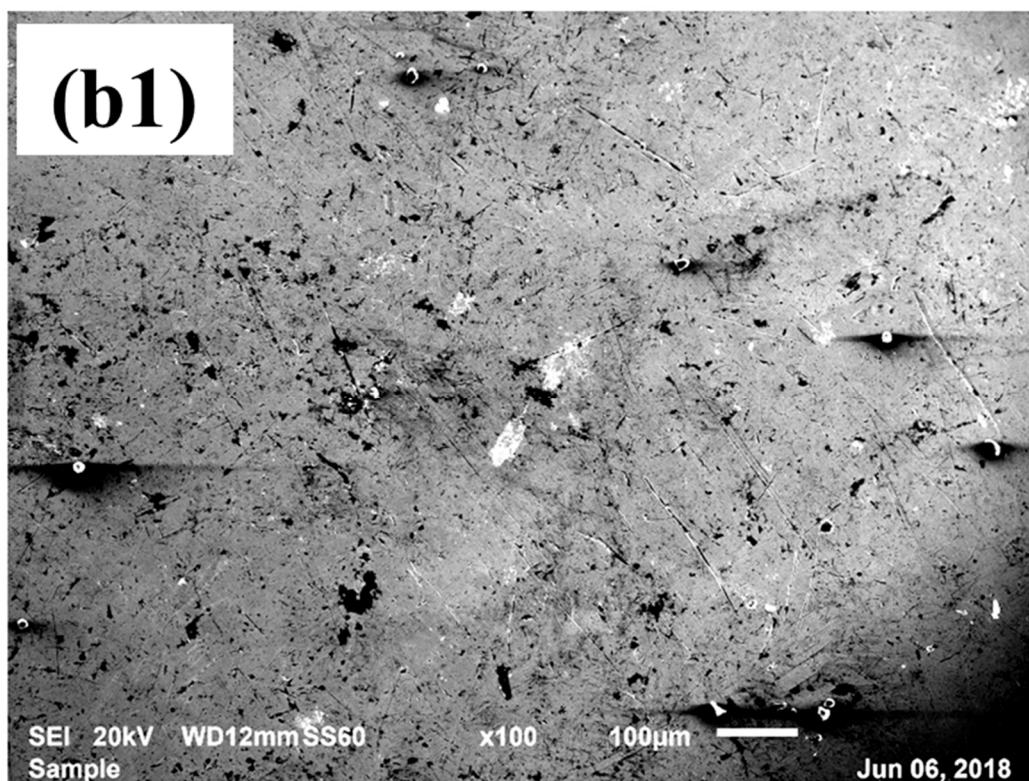


Figure S1. (b1) SEM image of the as-received evaporant source before film deposition.

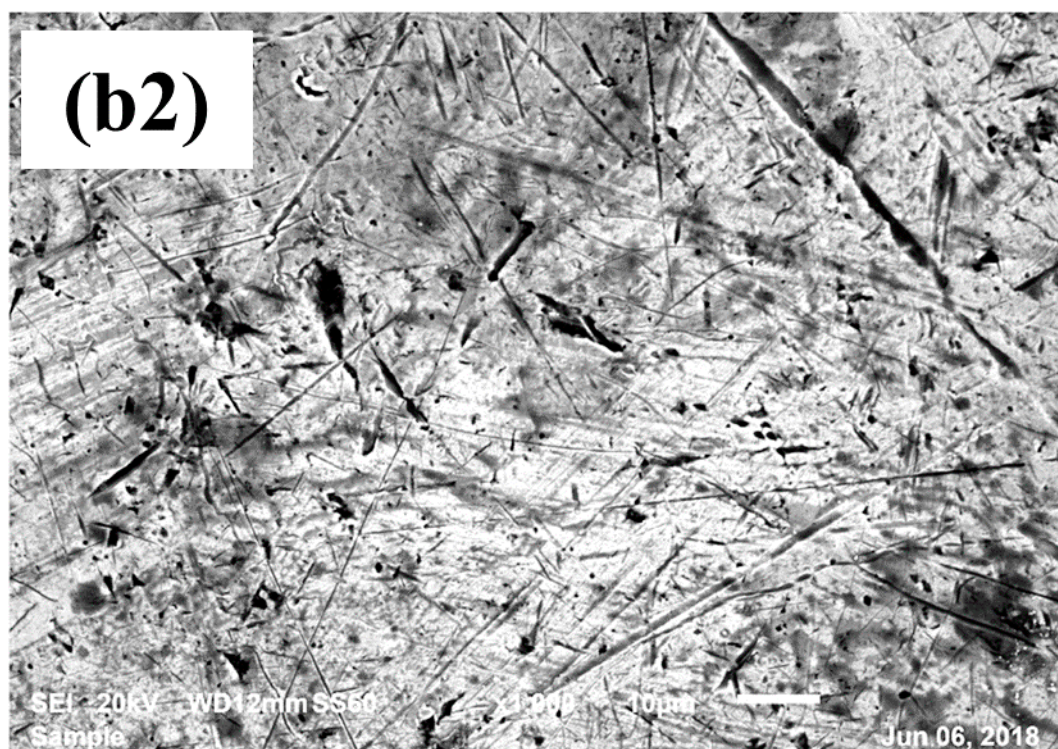


Figure S1. (b2) Higher resolution SEM image of the as-received evaporant source before film deposition.

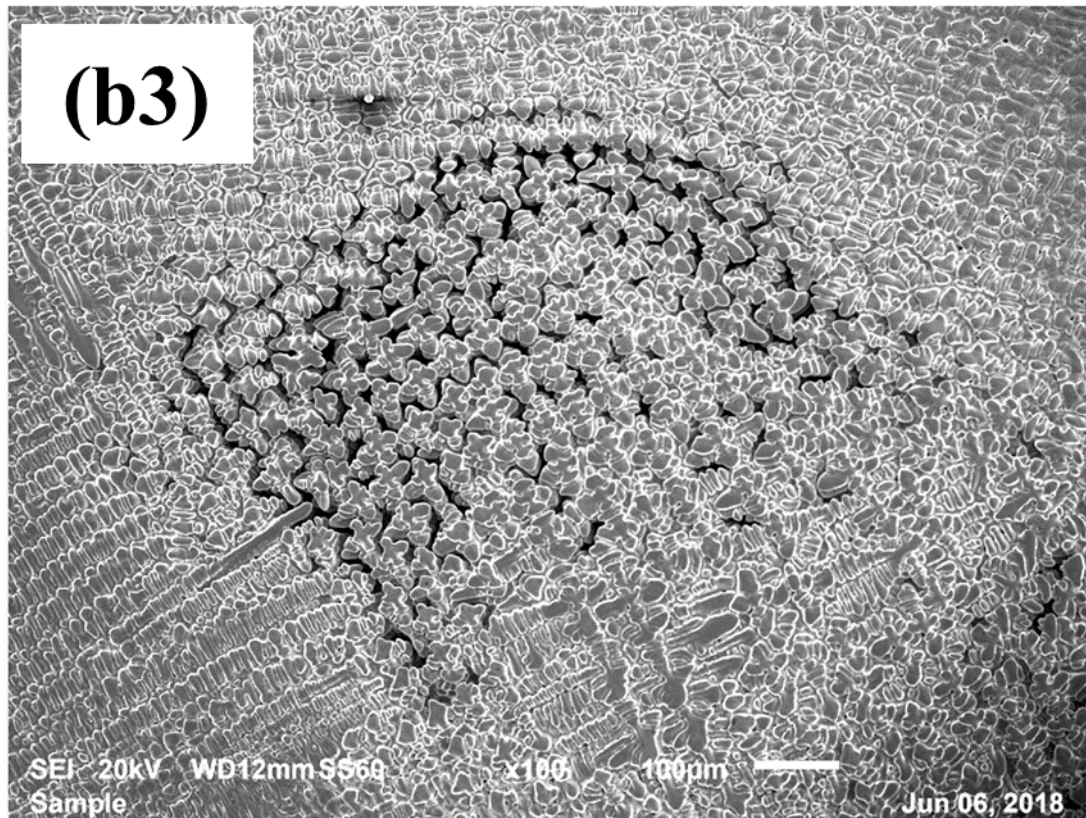


Figure S1. (b3) SEM image of the as-received evaporant source after 0.05 Å/s film deposition.

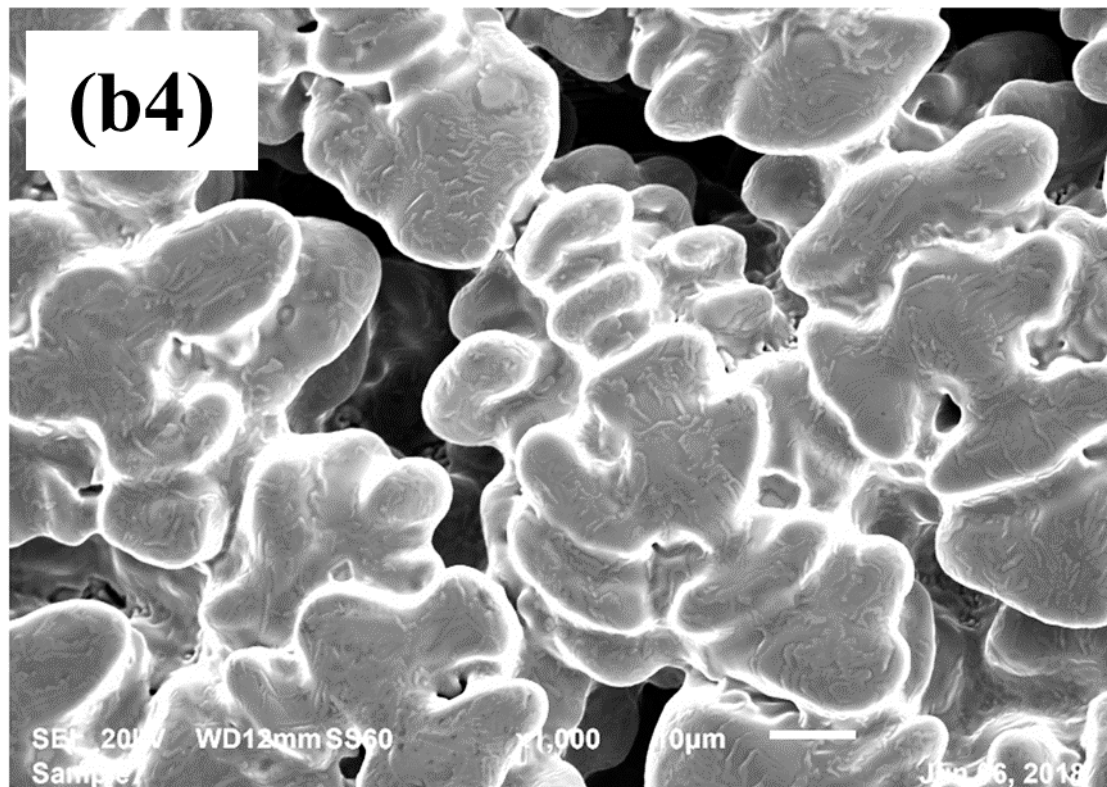


Figure S1. (b4) Higher resolution SEM image of the as-received evaporant source after 0.05 Å/s film deposition.

Deposited film EDS elemental analysis:

(a)

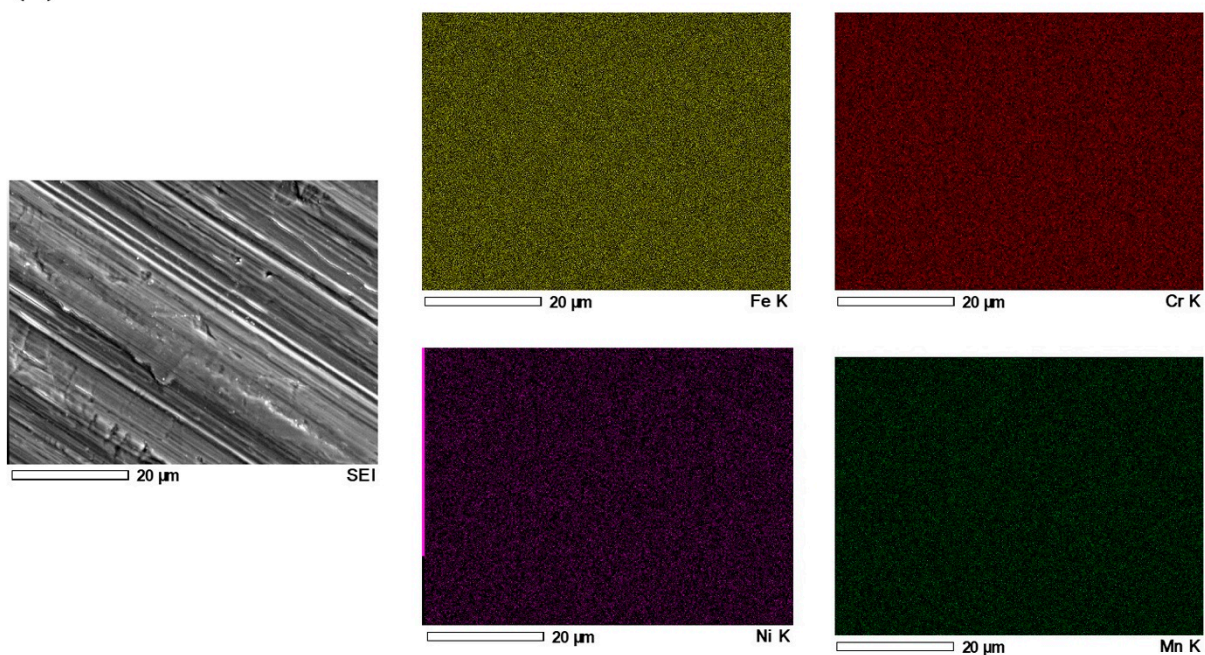


Figure S2. (a) SEM image and its elemental maps of the characterized 150 nm deposited SS film at 0.05 Å/s on Cu substrate.

(b)

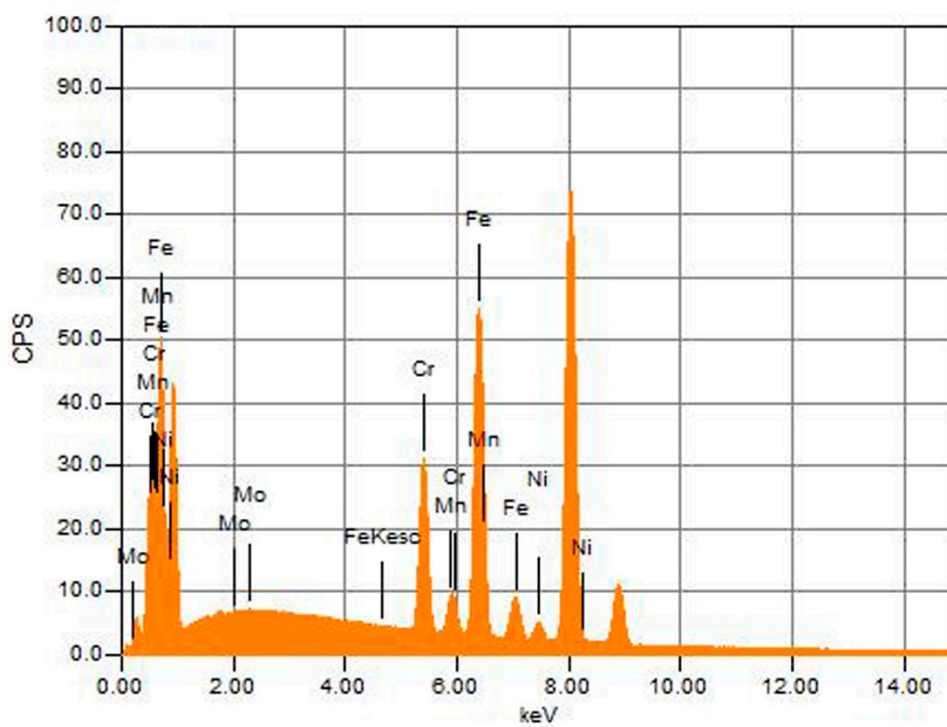


Figure S2. (b) EDS x-ray spectrum of the elements.

Surface topography analysis of SS films on SS 316L substrates:

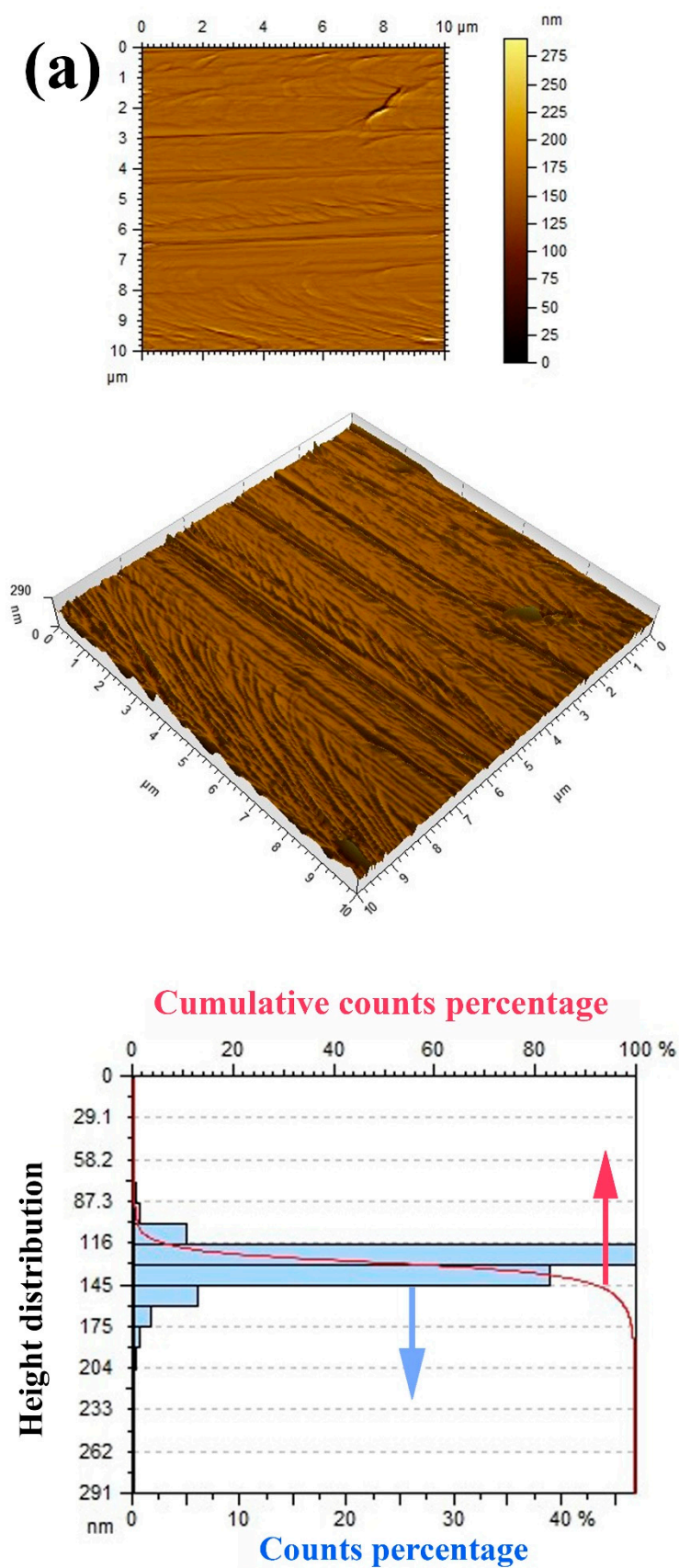


Figure S3. (a) AFM images and analysis of the uncoated substrate.

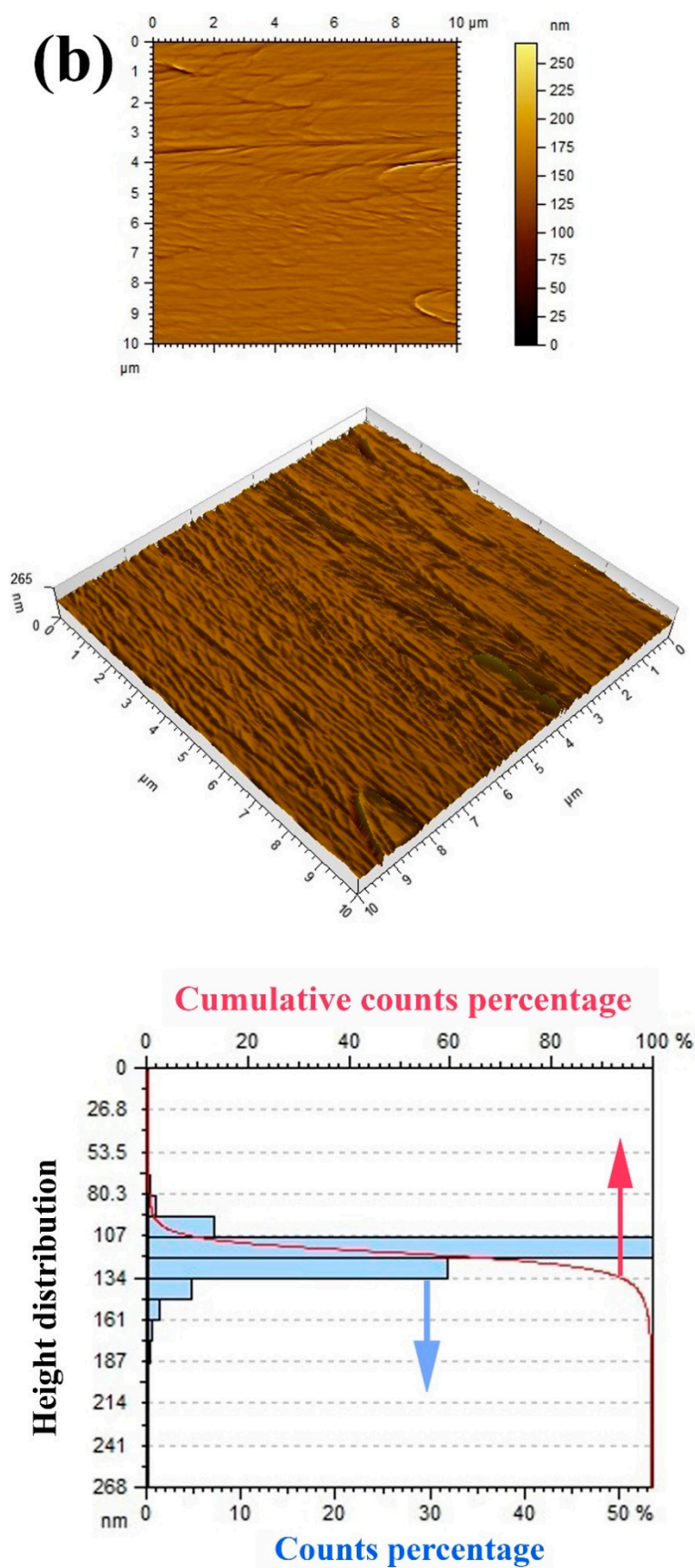


Figure S3. (b) AFM images and analysis of the 50 nm coated substrate.

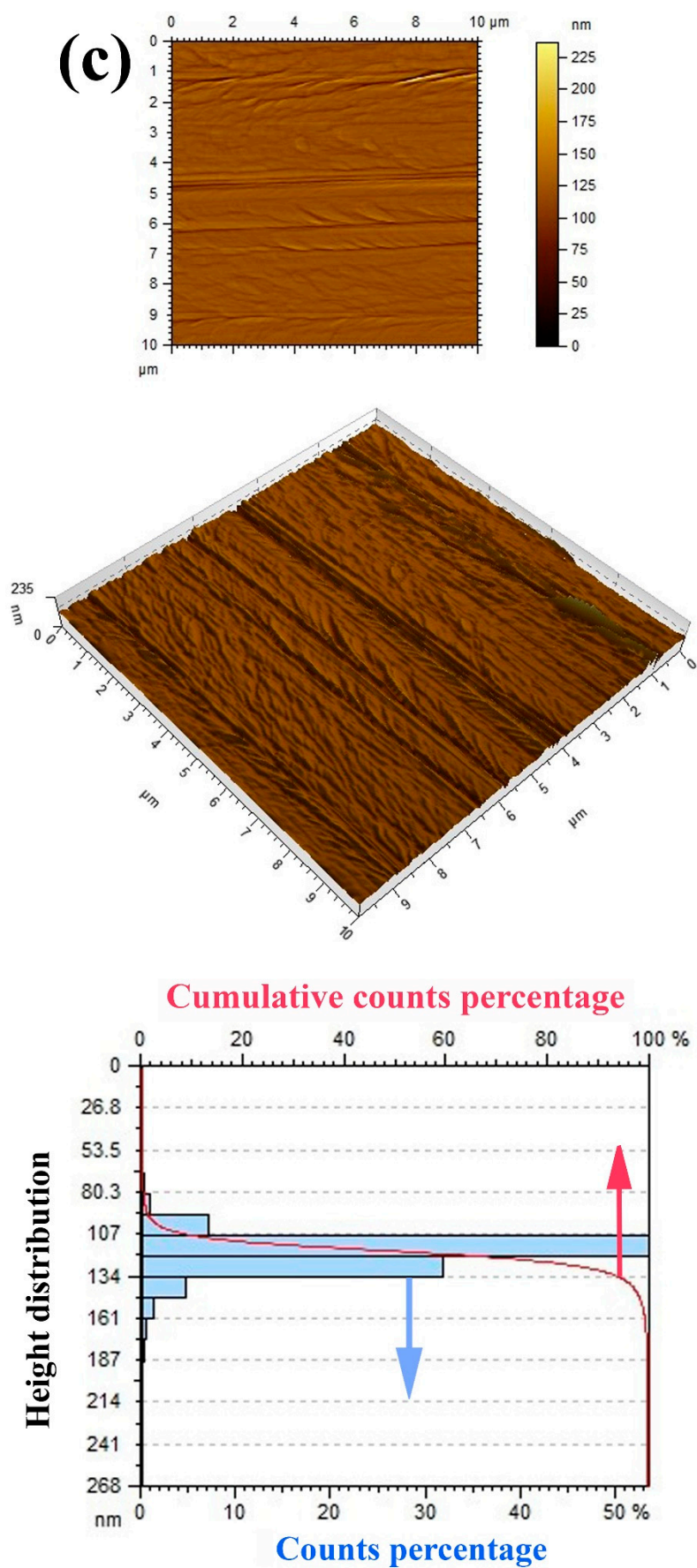


Figure S3. (c) AFM images and analysis of the 100 nm coated substrate.

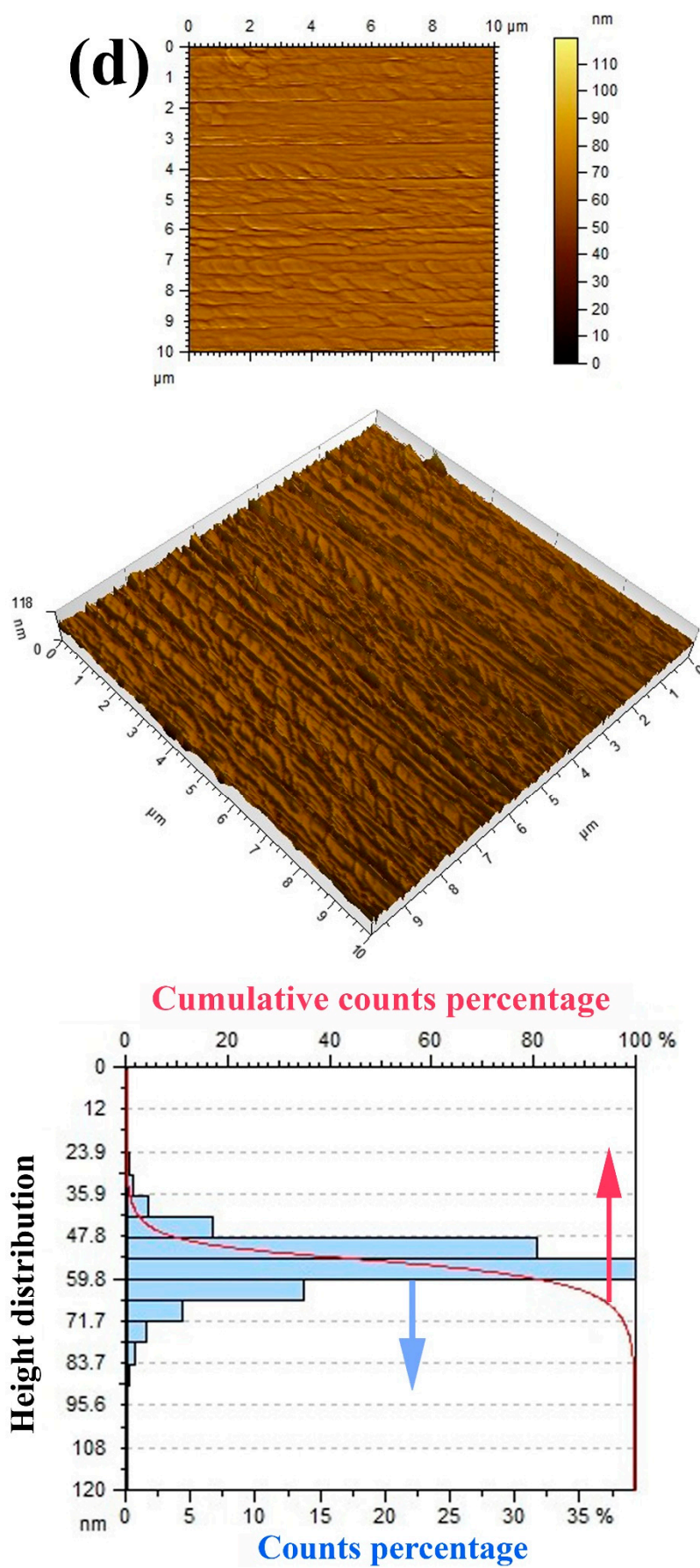


Figure S3. (d) AFM images and analysis of the 150 nm coated substrate.

Table S1. Contact angle measurements data.

DIW temperature (°C)	DIW pH value	Stainless steel substrate surface information	Highest CA (degree)	Lowest CA (degree)	ACA (degree)
20	4	Uncoated	126.5	122.5	124.9
30	4	Uncoated	120.6	119.4	119.8
40	4	Uncoated	106.5	106.2	106.3
50	4	Uncoated	110.3	110.1	110.2
60	4	Uncoated	112.7	112.1	112.3
20	7	Uncoated	132.8	130.9	131.7
30	7	Uncoated	122.5	119.5	120.6
40	7	Uncoated	115.8	115.6	115.7
50	7	Uncoated	115.2	114.5	114.8
60	7	Uncoated	115.3	114.8	115.1
20	9	Uncoated	117.8	116.7	117.4
30	9	Uncoated	115.7	114.8	115.3
40	9	Uncoated	108.3	108.0	108.1
50	9	Uncoated	112.7	112.1	112.3
60	9	Uncoated	107.4	106.8	107.1
20	4	50 nm SS film	121.0	117.8	119.5
30	4	50 nm SS film	110.8	110.4	110.6
40	4	50 nm SS film	104.2	103.8	104.0
50	4	50 nm SS film	110.1	108.7	109.3
60	4	50 nm SS film	110.7	110.2	110.4
20	7	50 nm SS film	131.3	130.1	130.9
30	7	50 nm SS film	116.7	114.8	115.8
40	7	50 nm SS film	105.1	104.9	105.0
50	7	50 nm SS film	104.6	104.1	104.4
60	7	50 nm SS film	101.3	100.8	101.1
20	9	50 nm SS film	109.6	108.7	109.2
30	9	50 nm SS film	106.6	106.4	106.5
40	9	50 nm SS film	108.7	107.4	108.1
50	9	50 nm SS film	100.6	99.0	99.7
60	9	50 nm SS film	105.0	104.9	104.9
20	4	100 nm SS film	117.4	115.8	116.7
30	4	100 nm SS film	104.0	103.5	103.8
40	4	100 nm SS film	103.8	103.3	103.5
50	4	100 nm SS film	99.0	98.1	98.5
60	4	100 nm SS film	102.1	101.3	101.7
20	7	100 nm SS film	128.3	128.1	128.2
30	7	100 nm SS film	109.6	108.8	109.3
40	7	100 nm SS film	103.4	102.8	103.0
50	7	100 nm SS film	103.3	102.7	102.9
60	7	100 nm SS film	100.6	99.0	99.9
20	9	100 nm SS film	103.3	103.0	103.2
30	9	100 nm SS film	103.4	103.2	103.3
40	9	100 nm SS film	106.2	105.1	105.7
50	9	100 nm SS film	99.7	98.1	98.8
60	9	100 nm SS film	98.4	97.5	98.1
20	4	150 nm SS film	111.0	110.6	110.9
30	4	150 nm SS film	99.8	98.1	99.0
40	4	150 nm SS film	102.8	102.0	102.5
50	4	150 nm SS film	94.4	92.1	93.1
60	4	150 nm SS film	88.7	88.4	88.5
20	7	150 nm SS film	122.6	121.0	122.0
30	7	150 nm SS film	106.7	106.4	106.6
40	7	150 nm SS film	102.9	102.5	102.7
50	7	150 nm SS film	95.8	95.1	95.5

60	7	150 nm SS film	95.5	94.7	95.2
20	9	150 nm SS film	95.0	94.2	94.5
30	9	150 nm SS film	101.3	100.9	101.0
40	9	150 nm SS film	103.4	102.9	103.2
50	9	150 nm SS film	97.5	96.2	97.0
60	9	150 nm SS film	97.4	96.7	97.0



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