

1. Translation of sample names to process parameters

1.1. On AlN

AlN	none 25 nm	none 250 nm	Cr 25 nm	Cr 250 nm	Zr 25 nm	Zr 250 nm
as dep.	ASN-012	ASN-092	ASNC-008	ANC-188	ASNZ-008	ASNZ-088
800 °C	ASN-013	ASN-093	ASNC-011	ANC-191	ASNZ-011	ASNZ-091

1.2. On $\text{Sc}_{0.14}\text{Al}_{0.86}\text{N}$

$\text{Sc}_{0.14}\text{Al}_{0.86}\text{N}$	none 25 nm	none 250 nm	Cr 25 nm	Cr 250 nm	Zr 25 nm	Zr 250 nm
as dep.	AN-012	AN-092	ANC-108	ANC-288	ANZ-108	ANZ-188
800 °C	AN-013	AN-093	ANC-111	ANC-291	ANZ-111	ANZ-091

2. Mapping of samples and raw data file names

2.1. RTA

- map of RTA log files to samples (**bold** are the samples presented in the paper):
 - ANC111.his: **ANC-111**
 - ANC190.his: ANC-190
 - ANC290.his: ANC-290
 - ANC291.his: **ANC-291**, ANZ-191, **ANZ-111**
 - ASN_013.his: **AN-013**, **AN-093**, **ASN-013**, **ASN-093**
 - ASN_Cr1.his: ANC-011, ANC-091, **ASNC-011**, ASNC-091
 - ASNCrZr.his: **ANC-191**, ANZ-011, **ANZ-091**, **ASNZ-011**, **ASNZ-091**

2.2. XRD

1. measurements shown in plots

- no interlayer: AN-012, AN-013, AN-092, AN-093, ASN-012, ASN-013, ASN-092, ASN-093
- 5 nm Cr: ANC-108, ANC-111, ANC-288, ANC-291r3, ASNC-008, ASNC-011, ANC-188, ANC-191r1
- 5 nm Zr: ANZ-108, ANZ-111, ANZ-188, ANZ-091, ASNZ-008r5, ASNZ-011r4, ASNZ-088, ASNZ-091

- original data of samples with repeated measurements that were made to reduce the presence of substrate peaks → for comparison of relevant peaks (should be same for original and repeated measurements)

2.3. EDS

- same as in table in 1.1.

2.4. SEM of FIB cross-sections

- cross-section prepared for samples: **ASNC-008, ASNC-011**
- extracted line profiles for thickness measurements
 - in subfolder /processed: images and ImageJ macros for line selection and rectangle marking