## First part: Analyzing the calibration grid structure

| GRID [#Measurement] | step height [nm] | step width [µm] | angle [°] |
|---|---|---|---|
| TGZ02 OLD #1 | 104,4 | 3028,35244141 | 24,5586946731781 |
| TGZ02 OLD #2 | 103,3 | 2913,76613281 | 19,3001331490365 |
| TGZ02 OLD #3 | 101 | 2995,61349609 | 21,3409833919344 |
| TGZ02 OLD #4 | 102,5 | 3011,98296875 | 21,7762045876112 |
| TGZ02 OLD #5 | 101,7 | 2995,61349609 | 20,1937682994564 |
| TGZ02 OLD #6 | 97,4 | 2897,39666016 | 24,8717852788737 |
| TGZ02 OLD #7 | 103,3 | 2930,13560547 | 23,436731952175 |
| TGZ02 OLD #8 | 103,5 | 2979,24402344 | 23,8477049819269 |
| TGZ02 OLD #9 | 103,2 | 3028,35244141 | 24,8433545748209 |
| TGZ02 OLD #10 | 101,7 | 2913,76613281 | 21,1725786194296 |
| mean value | 102,2 | 2969,422339844 | 22,5341939508443 |
| standard deviation | 1,97258995006847 | 50,7189559875853 | 2,03371806126476 |

| GRID [#Measurement] | step height [nm] | step width [µm] | angle [°] |
|---|---|---|---|
| TGZ01 OLD #1 | 21,7 | 3077,46085937 | 14,4057182696113 |
| TGZ01 OLD #2 | 19,9 | 3110,19980469 | 13,3106016980704 |
| TGZ01 OLD #3 | 20,4 | 3028,35244141 | 12,0715102107547 |
| TGZ01 OLD #4 | 21,6 | 3061,09138672 | 8,84181456019167 |
| TGZ01 OLD #5 | 21,4 | 3061,09138672 | 10,7210962734372 |
| TGZ01 OLD #6 | 20,0 | 3077,46085937 | 8,67221542753297 |
| TGZ01 OLD #7 | 19,9 | 3093,83033203 | 9,35905567007567 |
| TGZ01 OLD #8 | 19,3 | 3061,09138672 | 9,04557885562723 |
| TGZ01 OLD #9 | 21,3 | 3093,83033203 | 9,58856388494378 |
| TGZ01 OLD #10 | 22,0 | 3061,09138672 | 13,676180465476 |
| mean value | 20,75 | 3069,276123045 | 10,9692335315721 |
| standard deviation | 0,951314879522023 | 23,2141465342646 | 2,20849753619252 |

| GRID [#Measurement] | step height [nm] | step width [µm] | angle [°] |
|---|---|---|---|
| TGZ01 NEW #1 | 20,1 | 3126,56927734 | 10,0740327914585 |
| TGZ01 NEW #2 | 19,2 | 3093,83033203 | 12,5209287516224 |
| TGZ01 NEW #3 | 19,3 | 3044,72191406 | 12,7334908542724 |
| TGZ01 NEW #4 | 19,9 | 3126,56927734 | 13,7185986030084 |
| TGZ01 NEW #5 | 20,3 | 3028,35244141 | 14,8199180074326 |
| TGZ01 NEW #6 | 20,6 | 3077,46085937 | 14,2607115830266 |
| TGZ01 NEW #7 | 19,2 | 2995,61349609 | 15,6630797700543 |
| TGZ01 NEW #8 | 18,3 | 2962,87455078 | 12,0524489587921 |
| TGZ01 NEW #9 | 19,9 | 3011,98296875 | 13,7541990115256 |
| TGZ01 NEW #10 | 19 | 3175,67769531 | 14,4057182696113 |
| mean value | 19,58 | 3064,365281248 | 13,4003126600804 |
| standard deviation | 0,697296366132954 | 67,18356335984 | 1,6059578060911 |

### Values from manufacturer

| GRID | step height [nm] | step width [µm] | angle [°] |
|---|---|---|---|
| TGZ01 | 18 +/- 1 | 3.0 +/- 0.1 | - |
| TGZ02 | 102 +/- 1 | 3.0 +/- 0.1 | - |

## Third part: force-distance behavior

| Analyzed surface | deflection δ in minimum [V] EXTEND | deflection δ in minimum [V] RETRACT | deflection δ in const. part [V] EXTEND | deflection δ in const. part [V] RETRACT | Δ δ EXTEND [V] | Δ δ RETRACT [V] | sensitivity [nm/V] | force constant [N/m] (from script) | Force F [µN] EXTEND | Force F [µN] RETRACT |
|---|---|---|---|---|---|---|---|---|---|---|
| MICA old | 0,2440 | 0,2590 | 0,3801 | 0,3900 | 0,1361 | 0,1310 | 28,1400 | 29,0000 | 0,1111 | 0,1069 |
| ERRORS | 0,0488 | 0,0518 | 0,0760 | 0,0780 | 0,0903 | 0,0936 | - | 1,0000 | 0,0738 | 0,0765 |
| MICA cleaned | -0,1658 | -0,0993 | 0,0211 | 0,0082 | 0,1869 | 0,1075 | 27,2100 | 29,0000 | 0,1475 | 0,0849 |
| ERRORS | -0,0332 | -0,0199 | 0,0042 | 0,0016 | 0,0334 | 0,0199 | - | 1,0000 | 0,0269 | 0,0160 |

## Fourth part: Nanomechanical Imaging

| Differences | blue - green | blue-yellow | yellow-green |
|---|---|---|---|
| adhesion [µN] | 1,836 | 2,168 | 0,266 |
| adhesion error [µN] | 0,032 | 0,339 | 0,145 |
| height [nm] | 56,415 | 57,990 | 22,303 |
| height error [nm] | 4,352 | 7,735 | 3,780 |