

Direct visualization of the native structure of viroid RNAs at single-molecule resolution by atomic force microscopy

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Supplemental Data

Supplemental Figure S1. AFM images (fields of 70 x 70 nm) of 25 individual PSTVd-*ml*(+) renatured in a folding buffer lacking Mg²⁺. Their measured profile lengths are depicted, whose average values are shown in Table 2.

Supplemental Figure S2. AFM images (fields of 70 x 70 nm) of 25 individual PSTVd-*ml*(+) renatured in a buffer containing 4 mM Mg²⁺. Their measured profile lengths are depicted, whose average values are shown in Table 2.

Supplemental Figure S3. AFM images (fields of 70 x 70 nm) of 25 individual PSTVd-*mc*(+) renatured in a buffer containing 4 mM Mg²⁺. Their measured profile lengths are depicted, whose average values are shown in Table 2.

Supplemental Figure S4. AFM images (fields of 70 x 70 nm) of 25 individual PLMVd-*ml*(+)wt renatured in a folding buffer lacking Mg²⁺. Their measured profile lengths are depicted, whose average values are shown in Table 2. The maximum width of some of the molecules (corresponding to the 'spoon head' of the imaged structures) has been also measured, being 13 to 17 nm.

Supplemental Figure S5. AFM images (fields of 70 x 70 nm) of 25 individual PLMVd-*ml*(+)wt renatured in a buffer containing 4 mM Mg²⁺. Their measured profile lengths are depicted, whose average values are shown in Table 2.

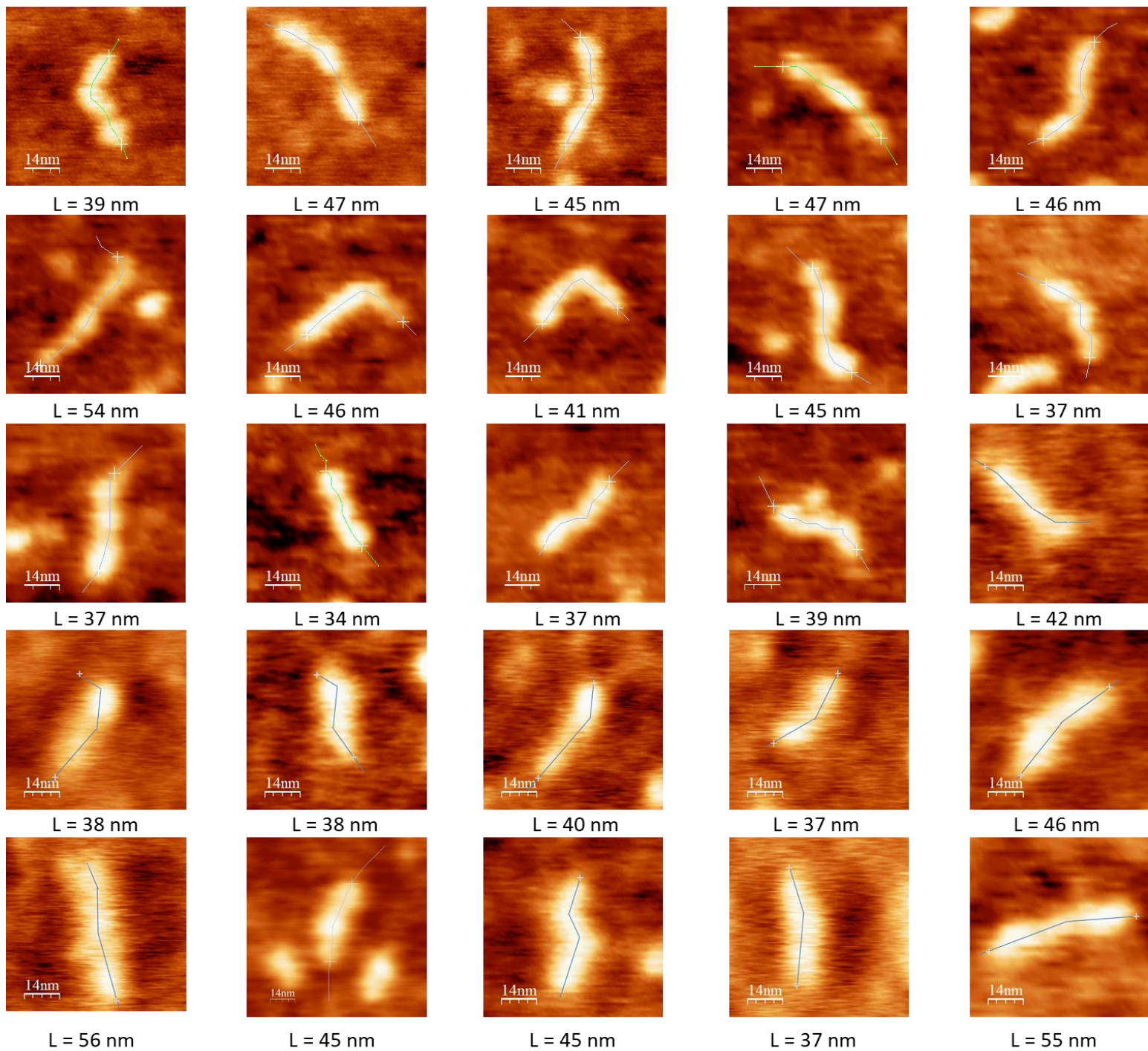
Supplemental Figure S6. AFM images (fields of 70 x 70 nm) of 25 individual PLMVd-*ml*(+)mut renatured in a buffer containing 4 mM Mg²⁺. Their measured profile lengths are depicted, whose average values are shown in Table 2.

Supplemental Figure S7. AFM images (fields of 70 x 70 nm) of 25 individual ELVd-*ml*(+) renatured in a folding buffer lacking Mg²⁺. Their measured profile lengths are depicted, whose average values are shown in Table 2.

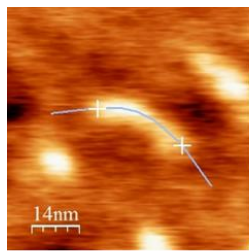
Supplemental Figure S8. AFM images (fields of 70 x 70 nm) of 25 individual ELVd-*ml*(+) renatured in a buffer containing 4 mM Mg²⁺. Their measured profile lengths are depicted, whose average values are shown in Table 2.

Supplemental Figure S9. AFM images (fields of 70 x 70 nm) of 25 individual ELVd-*ml*(-) renatured in a buffer containing 4 mM Mg²⁺. Their measured profile lengths are depicted, whose average values are shown in Table 2.

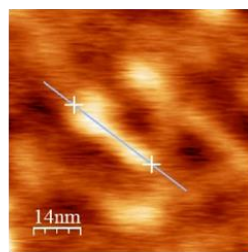
Suppl. Fig. S1



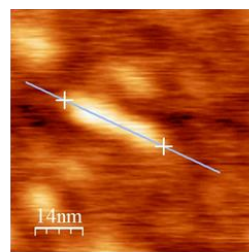
Suppl. Fig. S2



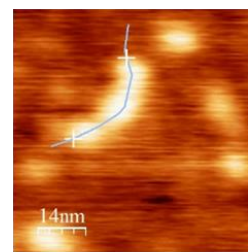
L = 30 nm



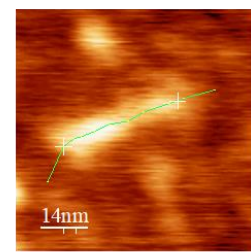
L = 29 nm



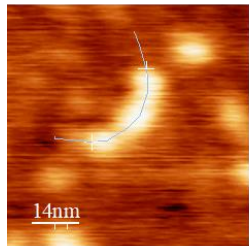
L = 31 nm



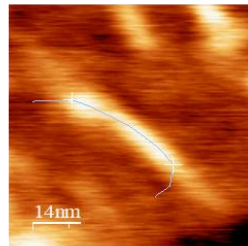
L = 31 nm



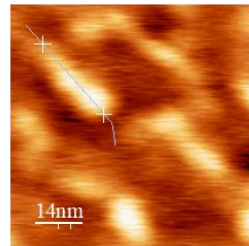
L = 35 nm



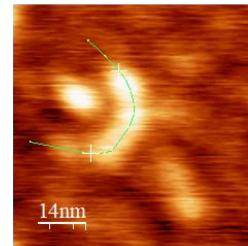
L = 30 nm



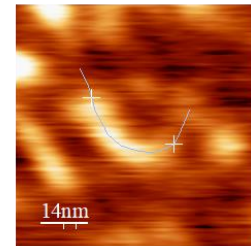
L = 36 nm



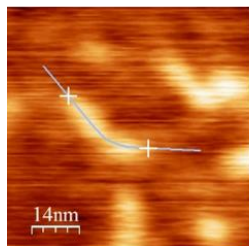
L = 29 nm



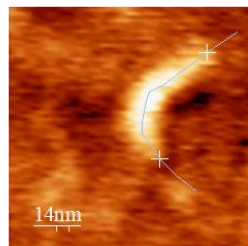
L = 32 nm



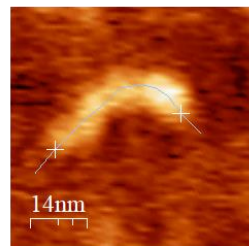
L = 32 nm



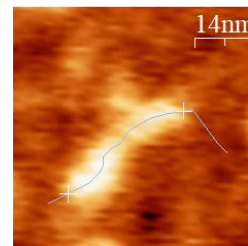
L = 29 nm



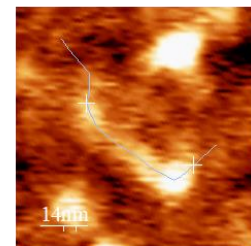
L = 40 nm



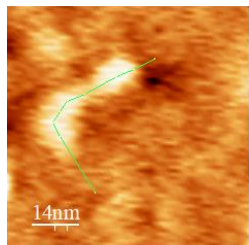
L = 38 nm



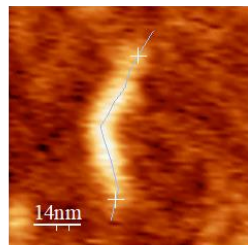
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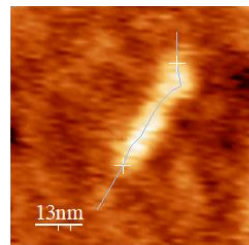
L = 40 nm



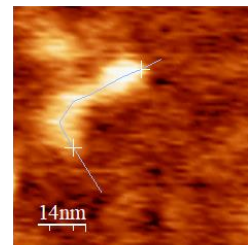
L = 35 nm



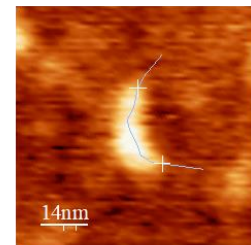
L = 43 nm



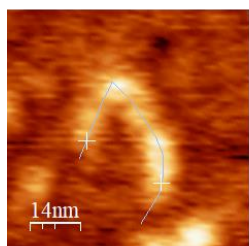
L = 33 nm



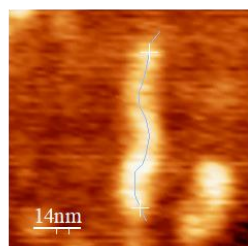
L = 36 nm



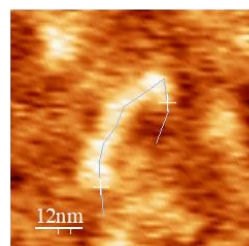
L = 27 nm



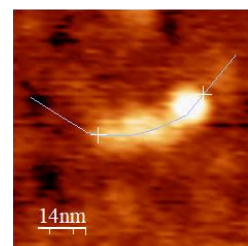
L = 49 nm



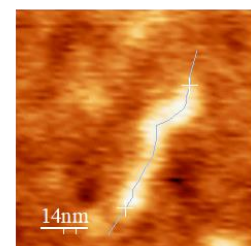
L = 45 nm



L = 38 nm

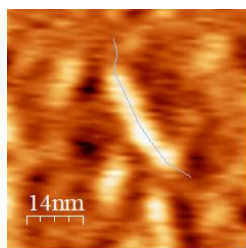


L = 33 nm

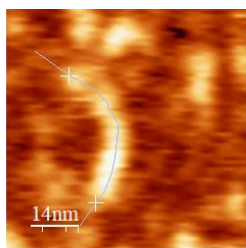


L = 42 nm

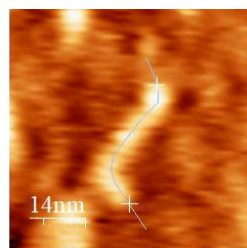
Suppl. Fig. S3



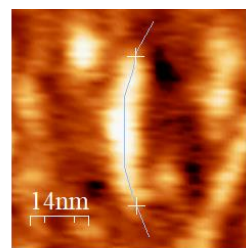
L = 35 nm



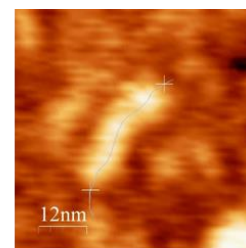
L = 43 nm



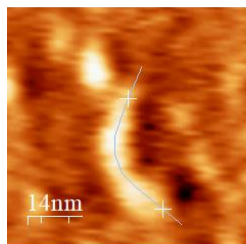
L = 36 nm



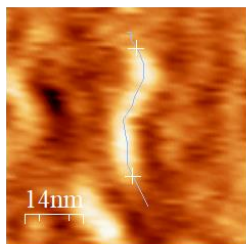
L = 38 nm



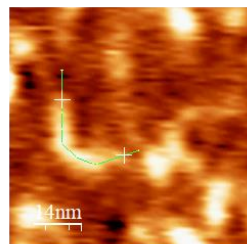
L = 32 nm



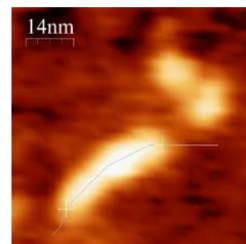
L = 35 nm



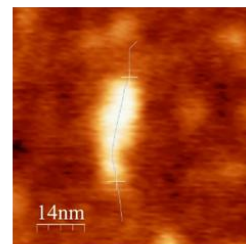
L = 33 nm



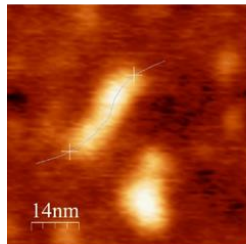
L = 32 nm



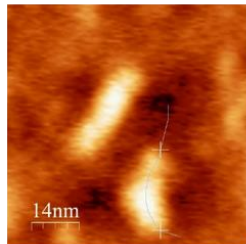
L = 34 nm



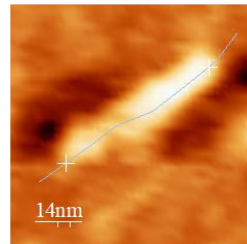
L = 31 nm



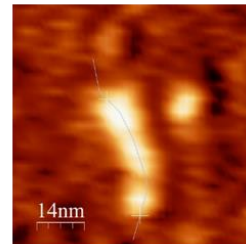
L = 30 nm



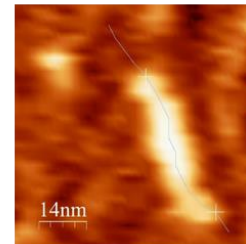
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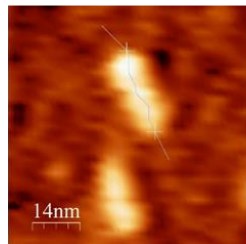
L = 47 nm



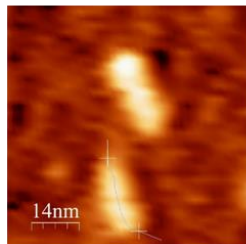
L = 37 nm



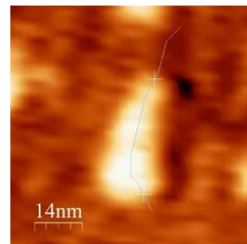
L = 48 nm



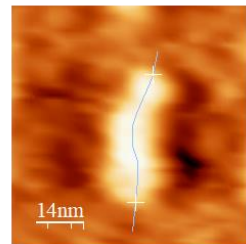
L = 26 nm



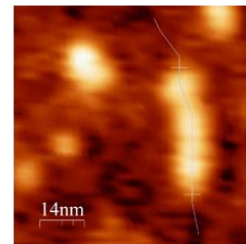
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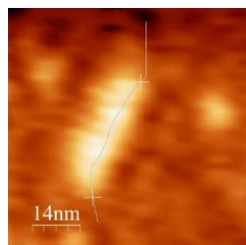
L = 34 nm



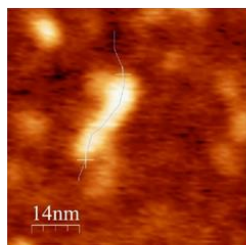
L = 37 nm



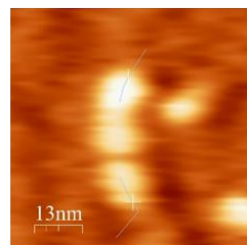
L = 40 nm



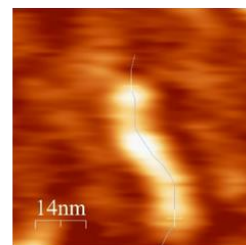
L = 37 nm



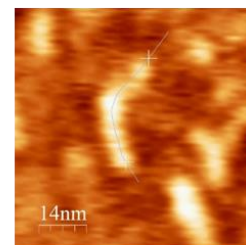
L = 30 nm



L = 34 nm

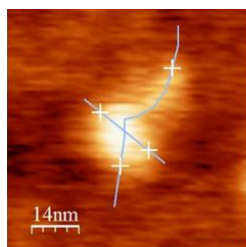


L = 37 nm

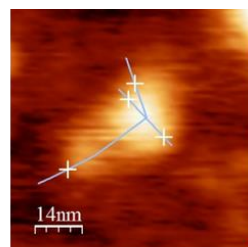


L = 40 nm

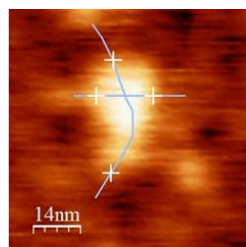
Suppl. Fig. S4



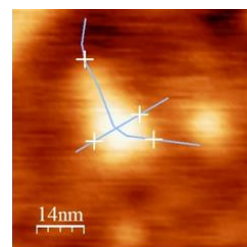
L = 36 nm



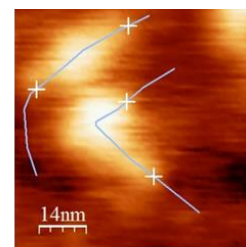
L = 36 nm



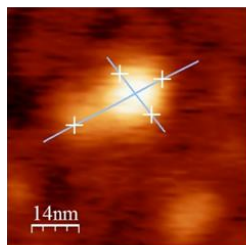
L = 35 nm



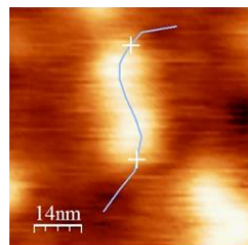
L = 32 nm



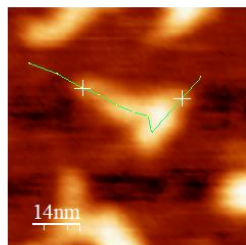
L = 32 nm



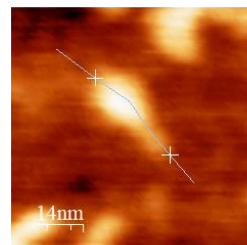
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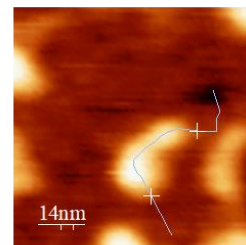
L = 34 nm



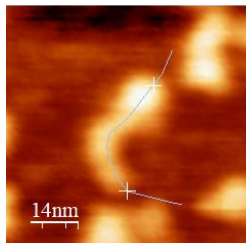
L = 38 nm



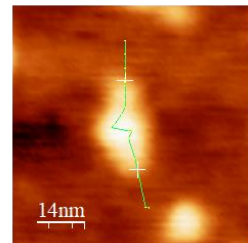
L = 31 nm



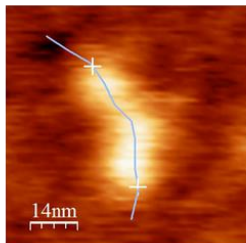
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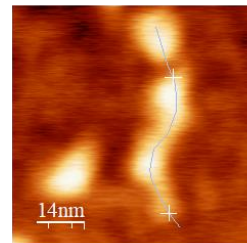
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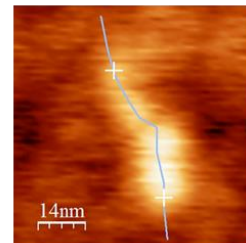
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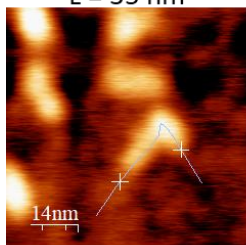
L = 47 nm



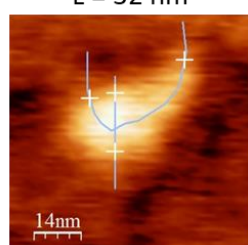
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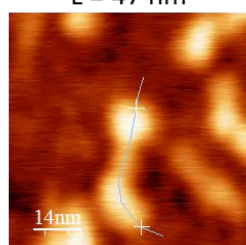
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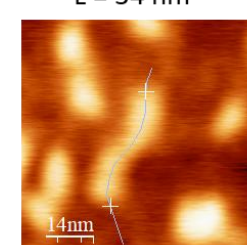
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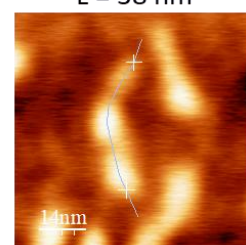
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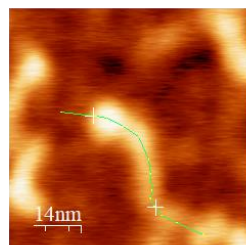
L = 37 nm



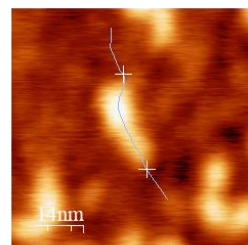
L = 36 nm



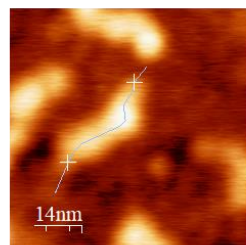
L = 38 nm



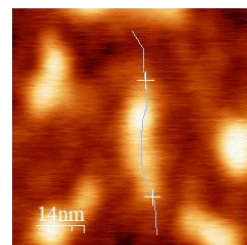
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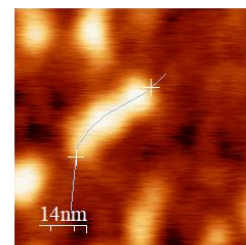
L = 30 nm



L = 36 nm

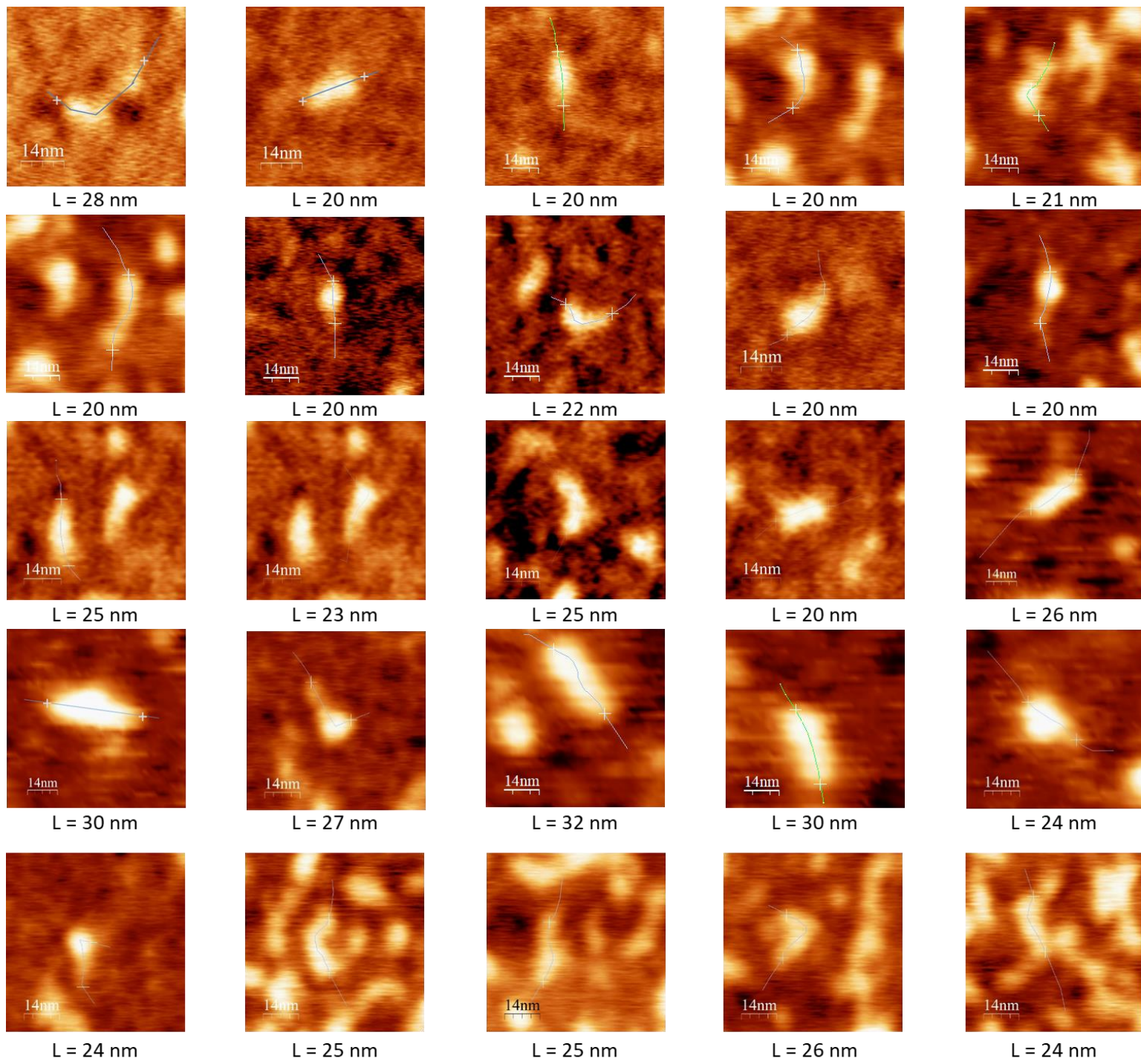


L = 33 nm

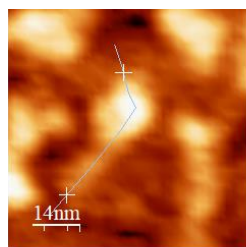


L = 30 nm

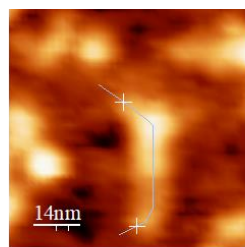
Suppl. Fig. S5



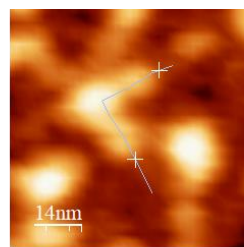
Suppl. Fig. S6



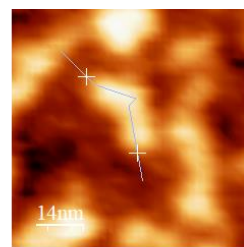
L = 39 nm



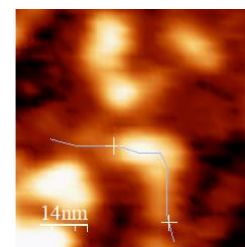
L = 41 nm



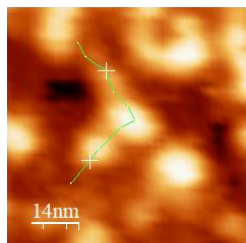
L = 36 nm



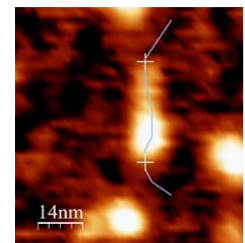
L = 32 nm



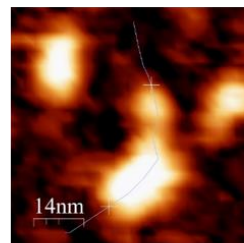
L = 38 nm



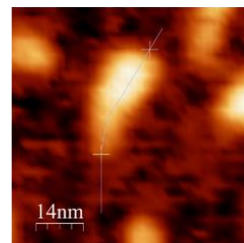
L = 33 nm



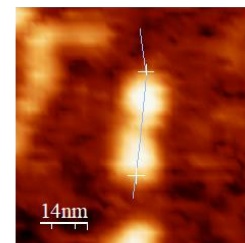
L = 31 nm



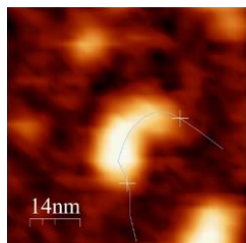
L = 34 nm



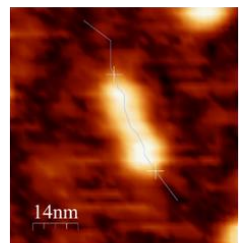
L = 33 nm



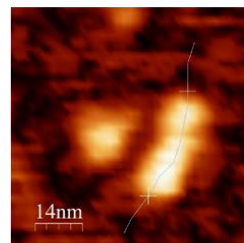
L = 33 nm



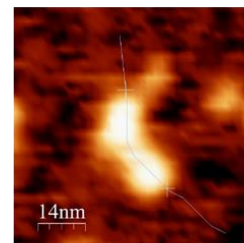
L = 31 nm



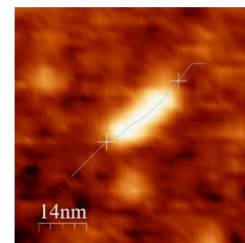
L = 32 nm



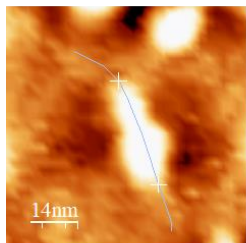
L = 32 nm



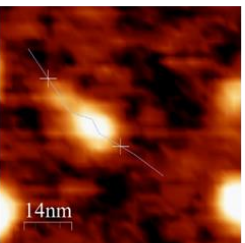
L = 31 nm



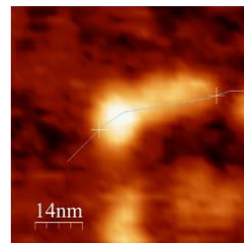
L = 26 nm



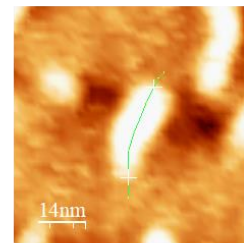
L = 28 nm



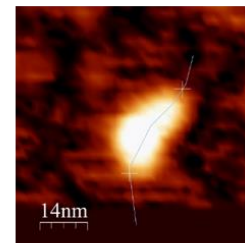
L = 29 nm



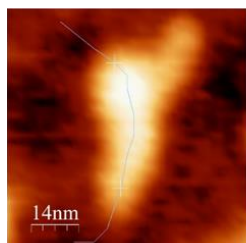
L = 34 nm



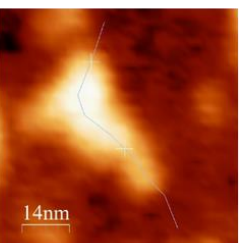
L = 31 nm



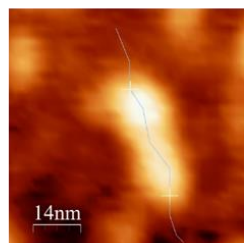
L = 28 nm



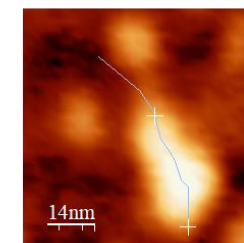
L = 39 nm



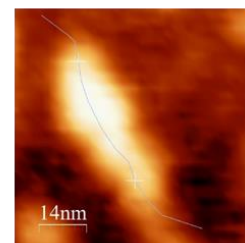
L = 32 nm



L = 34 nm

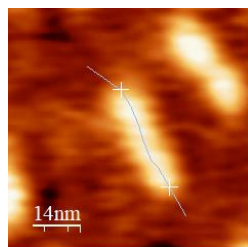


L = 36 nm

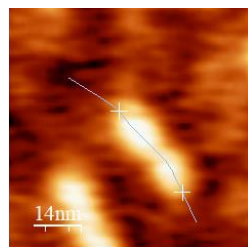


L = 38 nm

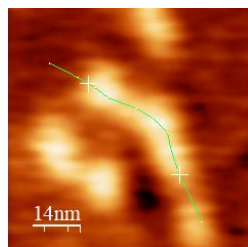
Suppl. Fig. S7



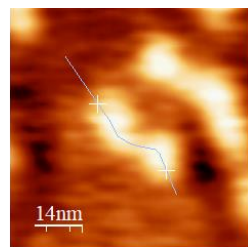
L = 32 nm



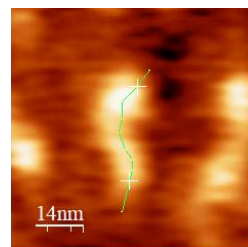
L = 30 nm



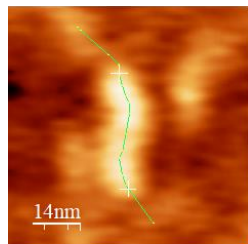
L = 28 nm



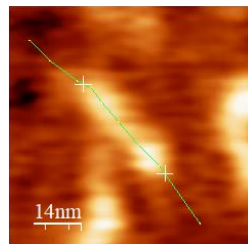
L = 30 nm



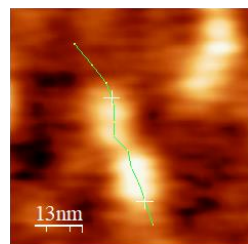
L = 28 nm



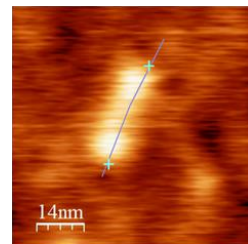
L = 33 nm



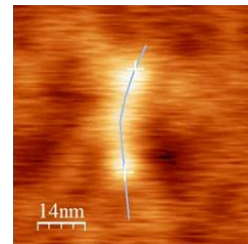
L = 33 nm



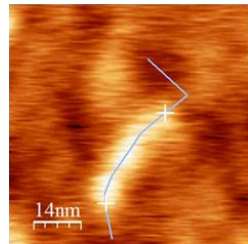
L = 31 nm



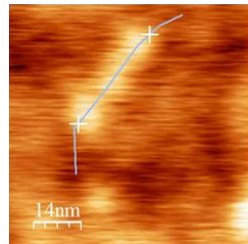
L = 29 nm



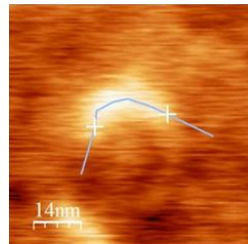
L = 30 nm



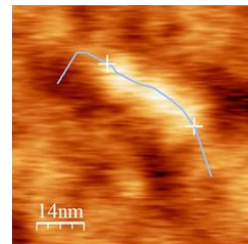
L = 32 nm



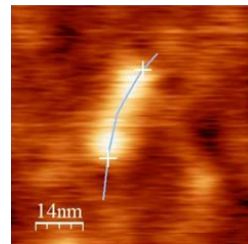
L = 32 nm



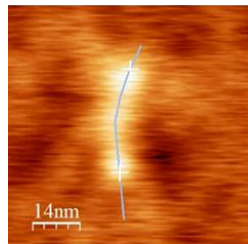
L = 27 nm



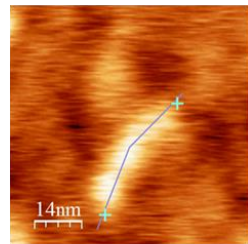
L = 32 nm



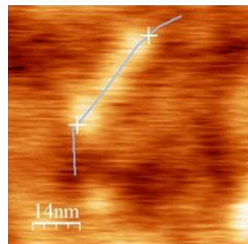
L = 28 nm



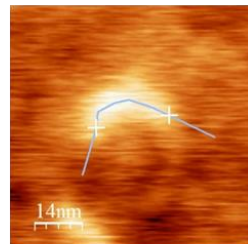
L = 29 nm



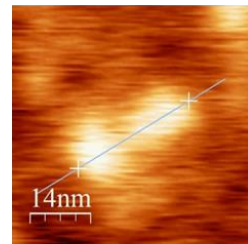
L = 33 nm



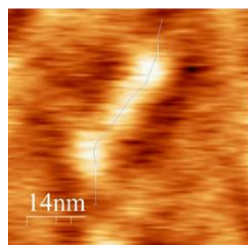
L = 28 nm



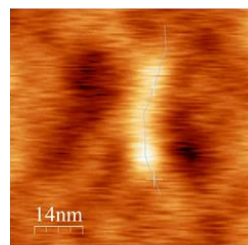
L = 27 nm



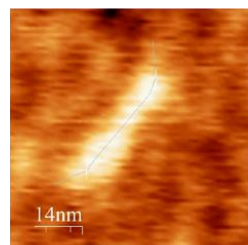
L = 29 nm



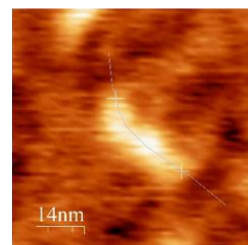
L = 32 nm



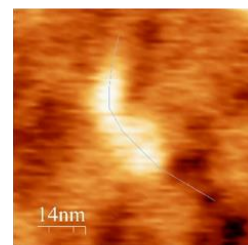
L = 28 nm



L = 33 nm

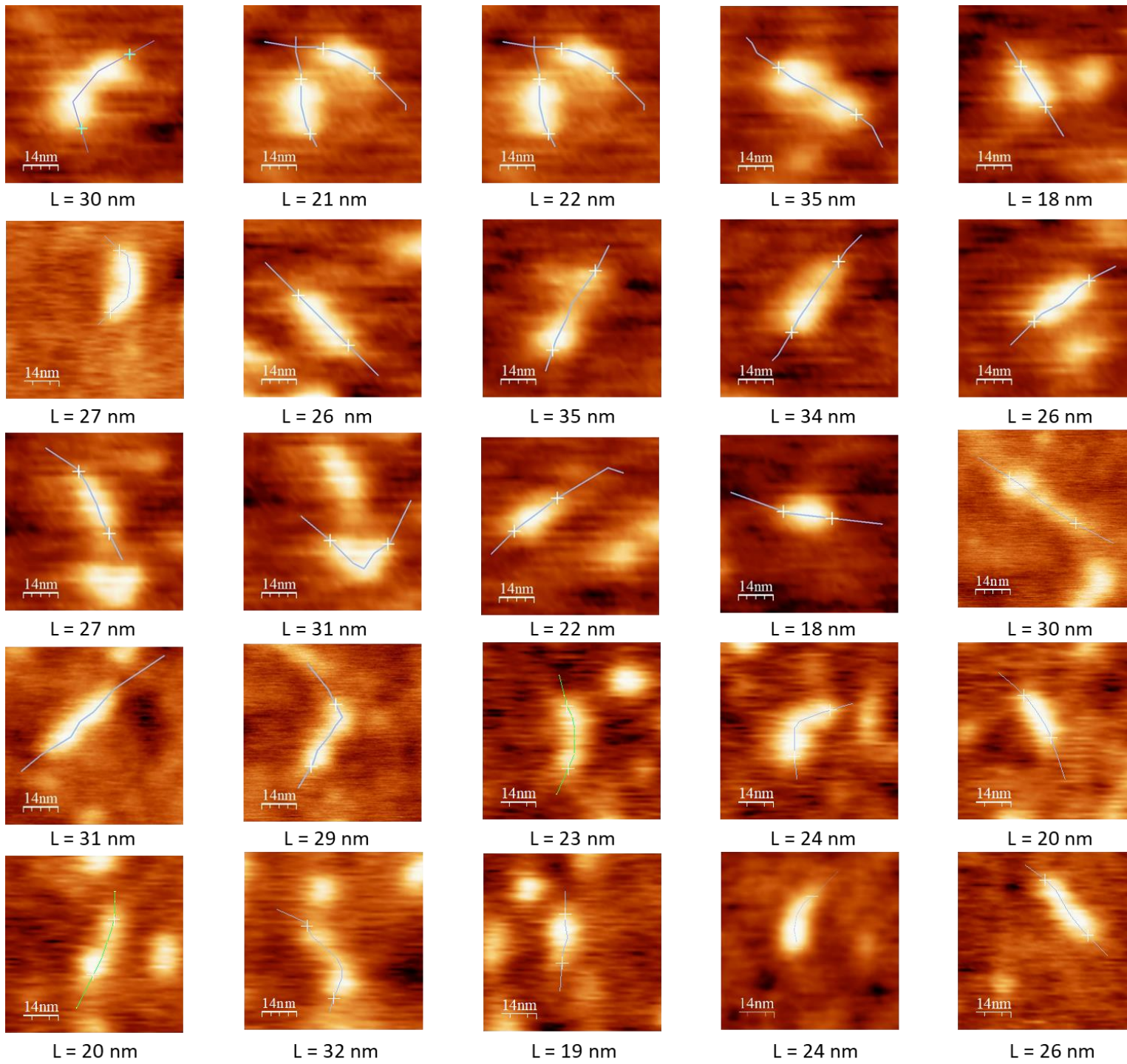


L = 29 nm



L = 31 nm

Suppl. Fig. S8



Suppl. Fig. S9

