

## Electronic Supplementary Information

# Dynamics of lattice defects in mixed DNA origami monolayers

*Yang Xin, Xueyin Ji, Guido Grundmeier, and Adrian Keller\**

Technical and Macromolecular Chemistry, Paderborn University, Warburger Str. 100, 33098 Paderborn, Germany.

\*E-mail: [adrian.keller@uni-paderborn.de](mailto:adrian.keller@uni-paderborn.de)

### **Assessment of the contribution of the scanning AFM tip**

In order to assess the contribution of the scanning AFM tip on defect dynamics during the continuous high-speed AFM imaging, we performed two control experiments. In control A, we followed the development of a DNA origami lattice (T:R = 10:1) for 180 min by high-speed AFM. After these 180 min of continuous scanning, we imaged a few other areas at the same sample surface that had not been scanned before. Control B was incubated for 180 min under the same conditions but without any scanning. AFM images obtained from the different samples after 180 min incubation are shown in Fig. S1. Fig. S2 compares the relative deviation of the corresponding impurity densities and correlation lengths of the controls from the continuous high-speed AFM measurement. On average, we find that the impurity densities and correlation lengths of the control experiments are lower than for the continuous measurements by about 10 % and 15 %, respectively. This indicates that the AFM tip during continuous scanning indeed introduces additional disorder and stimulates impurity desorption. However, the overall effect is comparatively small and has thus been neglected in the discussion of the results.

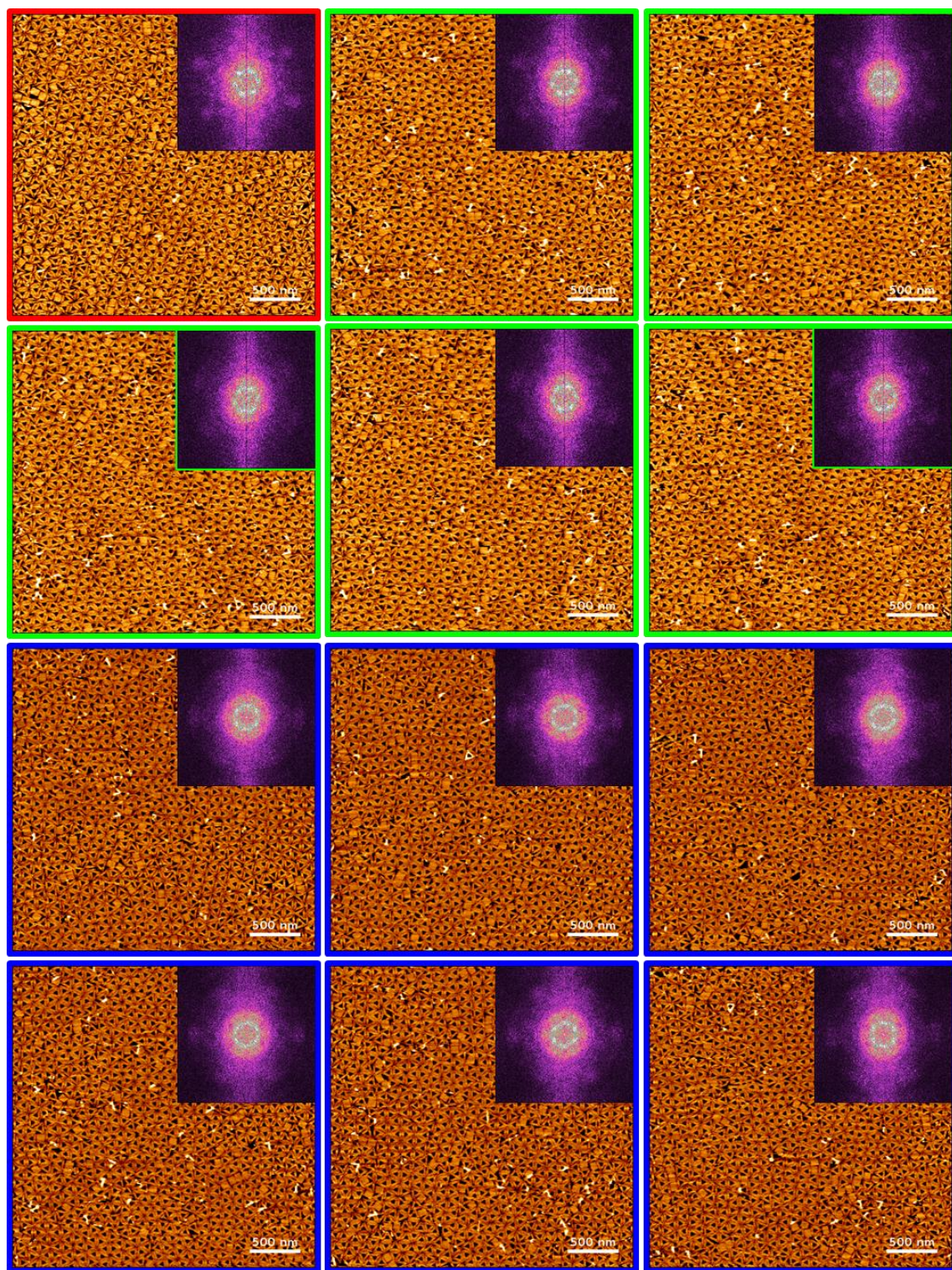


Figure S1. AFM images and corresponding FFTs recorded at different spots on the surface of control A, either with (red) or without (green) continuous scanning, and control B (blue).

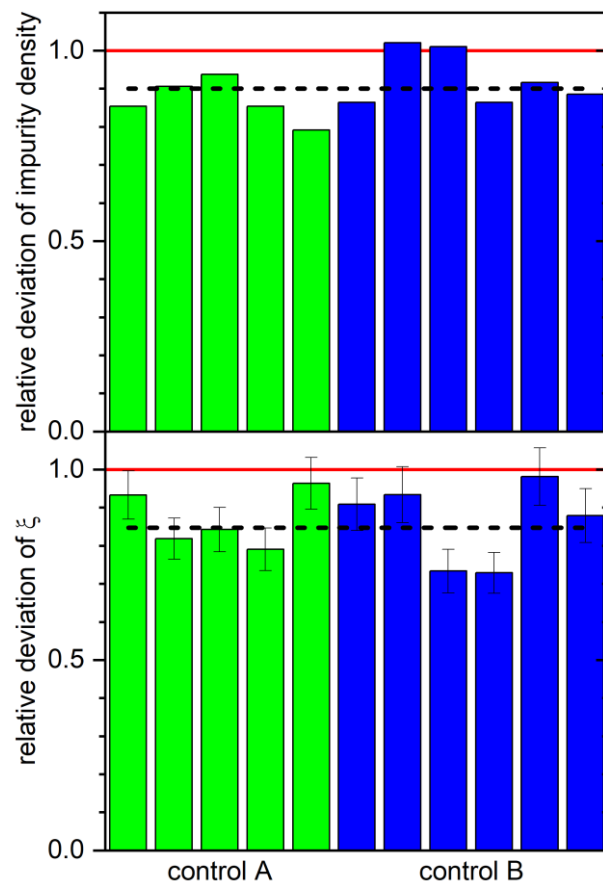


Figure S2. Relative deviation of the impurity densities and correlation lengths of the two controls from the continuous high-speed AFM measurement. The black dashed lines represent the average deviation over all controls.