



Supplementary Figure 1. A,B: Comparison between images of influenza virus negatively stained with methyamine tungstate that were either collected at the beginning of a tomography series (left) or after collecting 98 images in the series (total dose, $\sim 10^6$ e/nm²). The images were acquired at a magnification yielding a pixel size of 0.3 nm in a Tecnai TF30 operating at 300 kV. A pixel-by-pixel subtraction of image **A** from image **B** yields a uniform black image, demonstrating that the stain has not degraded. Rendering of spike shown in Figure 2 is derived from this tomogram. **C,D:** Comparison between images of influenza virus negatively stained with uranyl acetate that were either collected immediately (left) or after the equivalent of collecting 50 images under exactly the same conditions as used for NanoW in images **A** and **B** ($\sim 5 \times 10^5$ e/nm²). The stain becomes redistributed near the surface of the virus at this dosage (compare spikes, at arrows).