Fig. S1: Local shear rates of all the samples. Black dots represent the local shear rates in the high and low shear rate regions at each applied shear rate ($\dot{\gamma} = 0.16$ [1/s] and $\dot{\gamma} = 0.32$ [1/s]). The red horizontal bars represent the mean values of local shear rates in each banded domain over the samples.
Fig. S2: Distribution of the length of the fluorescently labeled actin filaments. Using the method in section 2.1, the labeled actin filaments were observed, and the 2000 images were captured every 0.04 μm. The images were averaged over 25 successive images so that the spacing of the averaged images was 1 μm. The lengths of the fluorescently labeled actin filaments in some images (z = 20, 30, 40, and 50 μm) were measured with the segmented line selection tools of ImageJ. The number of filaments measured was 2000.
Fig. S3: Fluorescence microscopy images (upper) and correlation images (lower) after stopping the shear flow. The time dependence of the second moment in the flow direction is also shown. In this experiment, to avoid the effect of fluorescence photobleaching, the observations were taken 5.7 mm (t = 0 min), 5.9 mm (1 min), 6.1 mm (2 min), 6.3 mm (3 min), 6.5 mm (4 min), 6.7 mm (5 min), and 6.9 mm (6 min) from the center of the upper rotation plate.