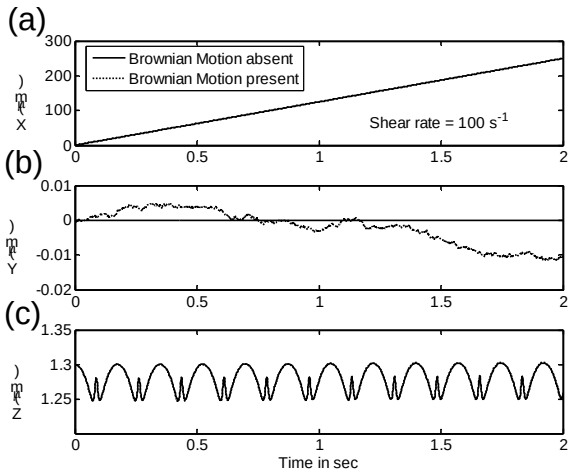

Figure S1. Plots of the (a) X-position (b) Y-position and (c) Z-position of a platelet centroid when flowing in linear shear flow at a shear rate of 100 s^{-1}. The platelet has an initial height of 1.3 μm and is oriented horizontally at the start of the simulation. The solid line represents the trajectory of a non-Brownian platelet, while the dotted line depicts the translational path for a Brownian platelet. The plots show that Brownian motion does not affect the platelet's trajectories in any significant way in the *x*-direction and *z*-direction. It also does not affect its rotation frequency. Brownian motion does affect the *y*-directional motion of the platelet. However, over the course of distance traveled, the distance moved by the platelet in the *y*-direction is 0.004% of the distance covered in the *x*-direction and is 1% of the platelet radius. Zero translation of the platelet in the *y*-direction as depicted for a non-Brownian platelet is an ideal case, and generally deviations will occur at least due to presence of other particles flowing in the media and also due to non-linearities in the shear rate.