

Electronic Supplementary Information: Modes of Adhesion of Two Janus Nanoparticles Adsorbed on the Outer and Inner Sides of Lipid Vesicles

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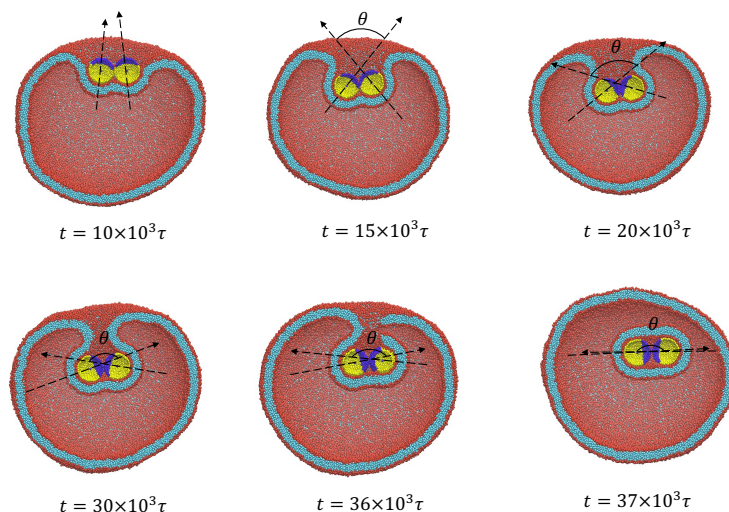


Figure S1: Time series of snapshots of a dimer of Janus NPs undergoing endocytosis at $J = 0.7$ and $\xi = 3.94k_B T/\text{nm}^2$. These snapshots show a reduction of the size of the neck during the endocytosis process, accompanied by an increased antialignment of the principal axes of the two NPs.

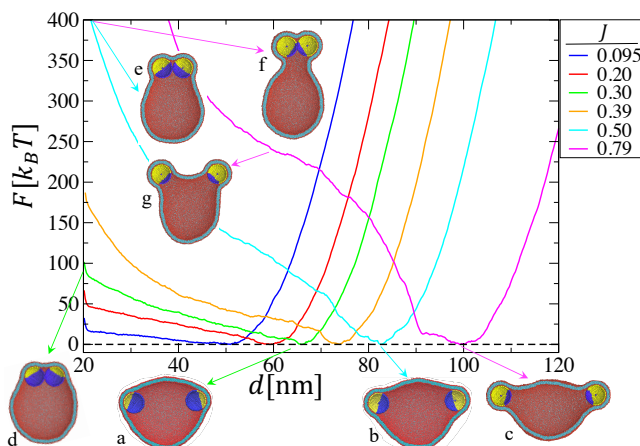


Figure S2: Free energy versus distance between two 20-nm NPs, adhering to the inner side the vesicle, for different values of J at $\xi = 4.33k_B T/\text{nm}^2$. Snapshots (a), (b) and (c) correspond to most stable states at $J = 0.30, 0.50$ and 0.79 , respectively. Snapshots (d), (e), and (f) correspond to the dimeric state ($d = 11$ nm) for $J = 0.30, 0.50$, and 0.79 , respectively. Snapshot (g) is for $J = 0.79$ at $d = 60$ nm.

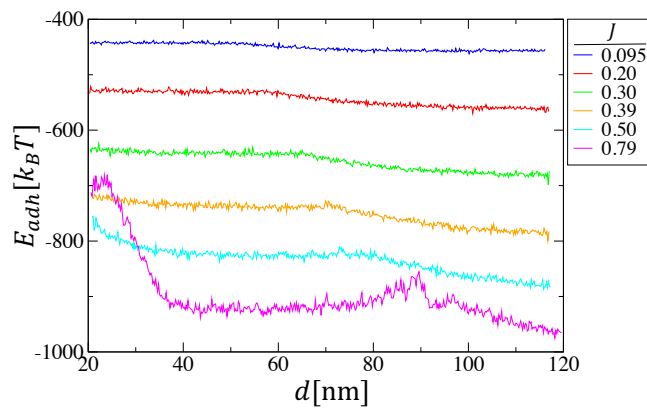


Figure S3: Net adhesion energy of two 20-nm Janus NPs, adhering to the inner side of the vesicle at $\xi = 1.57k_B T/\text{nm}^2$, as a function of the distance between them. Graphs for $J = 0.20, 0.30, 0.39, 0.50,$ and 0.79 were translated upward by 350, 750, 1200, 1700, and 2900 $k_B T$, respectively.