

### Supplementary Information

Movie 1. The *C-shaped* configuration: Video of the *C-shaped* configuration.mpg.  
The relevant parameters are  $r_d = 8.1\text{nm}$  and  $I = 0.5\text{M}$ .

Movie 2. The *folded S-shaped* configuration: Video of the *folded S-shaped* configuration.mpg. The relevant parameters are  $r_d = 4.5\text{nm}$  and  $I = 0.01\text{M}$ .

Movie 3. The *double C-shaped* configuration: Video of the *double C-shaped* configuration.mpg. The relevant parameters are  $r_d = 4.5\text{nm}$  and  $I = 1.0\text{M}$ .