Remark on publications

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1 Enhancement in the diffusivity of Brownian spheroids in the presence of spheres

Concern

There is no concern or objectionable findings accept the phase diagram in the binary system. All the ticks are exacts and verified multiple times. However distance between the upper and lower ticks could be lowered to better predict the phase boundary line between isotropic and nemaic phases.

2 Self Assembly of Patchy Anisotropic Particle Forming Free Standing Monolayer Film

Concern

The stability of the monolayer is questioned. But in the phase diagram where the monolayers shows the most stable state than any other phase can be seen as a crystal formed by the periodic stacking of monolayers, at that pressure. It can have some promissing properties.

3 Breaking the size constraint for nano-cages using annular patchy particles

Concern

There is no concern accept the experimental preparation of annular patchy colloidal particles. The findings are really very exciting.

4 Dimensional confinement and super-diffusive rotational motion of uniaxial colloids in the presence of cylindrical obstacles

Concern I

The flipping of the particles is the major concern and the $g(r)$ deviation from 1 is the other major concern. Remember $g(r)$ shown in the published work is normalized by the effective volume fraction, measured over all the spherical shells which counts the whole surrounding volume, which will be just computed by $N/f\{0\}f\{1\}f\{2\}$, without substracting the volume of the cylinder. So in effective, instead of $g(r)$ going down below one, it rises above 1 overall the structure will be the same but it is just the graph which will shift as whatever is being multiplied happening for all the shells equally. So its an overall shift. So without any modification $g(r)$ will go down, but with normalizing with actual volume fraction rather than effective colume fraction the g(r) will rise up and for a long long range r, will stagnate to 1.

Concern II

The other major concern is about the region of flipping. It is given by the flipping region, which is shown to be happening in the radius greater than 5, it happens even at lesser radius let us say at radius of obstacles 1.5 but then the volume fraction threshold changes and reaches 0.45 rather than 0.425. So, for a wider range of volume fraction (let us say greater than 0.425), where we observe more flipping, radius should be very high.

Its also not necessary that the flipping is not possible for other cases. Then what is special? The special thing about the flipping in the presence of obstacles are, first they are happening due to the presence of obstacles. Second, they are happening in an specific regions. Like in other cases flipping may happen but at random places but here, we can observe that the system is being specific in terms of the location of the flipping, so in effect it is happening locally. Now, when we come to the rotational super-diffusive motion, then let me tell that it is just a term coined for selling the work. That is all, I have to say, regarding the use of the term.

In reality there is no solid dynamic or thermodynamic quantities which can measure such a local single particle flipping effectively. This is the problem. However, the presented work tried its best to do so.