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Coalescence of Particles Related to Alignment Energy

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Abstract: *Coalescence of particles coincides with the lower energy in principle needed for the alignment of the essential Part with the heavier than the lighter Whole.*

Keywords: *Coalescence of particles, alignment energy*

1. Introduction

Let us see, how coalescence of particles [1] and alignment energy [2] are related.

2. Coalescence

Coalescence is the process by which two or more droplets, bubbles or particles merge during contact to form a single entity. Representation of the coalescence is presented in Figure 1.

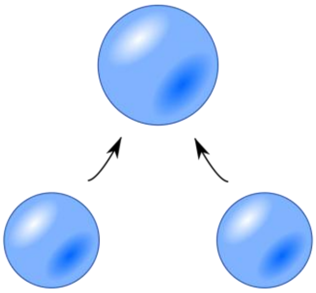

Figure1. *Coalescence*

3. Alignment Energy

Alignment energy enables the alignment of Part with its Whole nature. [3] In the cases considered so far, the Part was an electron and the Whole was an atom, molecule or cluster. Assuming that the Whole can also be a huge cluster, for instance, a raindrop, and the Part can also be something heavier than an electron, the next formula should be applicable:

$$E_{alignment} = \left(\frac{R_{unaligned}}{R_{aligned}} - 1\right) m_{part} c^2. \quad (1)$$

Where $R_{unaligned}$ is the unaligned modified ratio of mass of the Whole to mass of the Part:

$$R_{unaligned} = \frac{\lambda_{part}}{\lambda_{whole}} s(1) = \frac{m_{whole}}{m_{part}} s(1). \quad (2)$$

The factor s (1) = 1,696 685 529… is the average elliptic-hyperbolic manifestation of one (n = 1) elliptic Compton wavelength of the Part given by the next equation:

$$s(n) = n\left(2 - \frac{1}{\sqrt{1 + \frac{\pi^2}{n^2}}}\right), n \in \mathbb{N}. \quad (3)$$

And the aligned modified ratio $R_{aligned}$ is given by the same equation (3) for the down rounded unaligned modified ratio (n = ROUNDDOWN ($R_{unaligned}$)) as follows:

$$R_{aligned} = s\left(ROUNDDOWN(R_{unaligned})\right). \tag{4}$$

Since it holds:

$$R_{unaligned} - R_{aligned} < 1. \tag{5}$$

We can write:

$$\frac{R_{unaligned}}{R_{aligned}} - 1 < \frac{1}{R_{aligned}}. \tag{6}$$

Applying equation (1) the next non-equation is given:

$$E_{alignment} < \frac{1}{R_{aligned}} m_{part} c^2. \tag{7}$$

Taking with the help of equation (4) the next form:

$$E_{alignment} < \frac{1}{s\left(ROUNDDOWN(R_{unaligned})\right)} m_{part} c^2. \tag{8}$$

And with the help of equation (2) we have:

$$E_{alignment} < \frac{1}{s\left(ROUNDDOWN\left(\frac{m_{whole}}{m_{part}}\, s(1)\right)\right)} m_{part} c^2. \tag{9}$$

Or approximately:

$$E_{alignment} \approx \frac{m_{part}}{m_{whole}} m_{part} c^2. \tag{10}$$

The given formula (9),(10) tells us that the essential Part can be easier aligned with the nature of a heavier than lighter Whole since for such alignment in principle less alignment energy is needed. This is a rule where exceptions are allowed and coincides with the fact that the coalescence of particles is preferable and the breakup of particles rare.

4. Conclusion

Coalesced particles in principle need lower energy for the alignment their essential Part with the Whole. And decomposed particles need lower alignment energy only exceptionally what in general supports the coalescence of particles and only in rare cases the breakup.

Dedication

To the exception proving the rule

Figure2. *The exception proves the rule? [4]*

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[3] Janez Špringer (2022) "Alignment Energy Role in Hydrogen Spillover". International Journal of Advanced Research in Physical Science (IJARPS) 9(1), pp.1-4, 2022

[4] www.quickanddirtytips.com/education/grammar/why-do-we-say-the-exception-that-proves-the-rule

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