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Destabilisation of $(H_2O)_{13}$ Water Cluster at 71°C

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Abstract: *At about 71°C the Hydrogen subtle touch stabilisation energy in H_2O surpasses the alignment energy of $(H_2O)_{13}$ cluster and could destabilize it.*

Keywords: *alignment energy of $(H_2O)_{13}$ cluster, Hydrogen subtle touch stabilisation energy in water molecule*

1. Introduction

In this fragment we will compare $(H_2O)_{13}$ cluster alignment energy [1] with the Hydrogen subtle touch stabilisation energy in H_2O [2] on the temperature interval from 0°C to 100°C [3].

2. $(H_2O)_{13}$ Cluster Alignment Energy

The cluster alignment energy enables to confirm the electron cluster identity so that with the help of cluster wave length the electron wave length is measured without remainder [4]. The alignment characteristics of water cluster $(H_2O)_{13}$ and its constituents H, O, H_2O as well as electron itself (e-) are presented in Table1.

Table1. *The alignment characteristics of H, O, H_2O, $(H_2O)_{13}$ and e^-*

$Particle$	$Mass\ (Da)$	$R_{unaligned} = \frac{m_{particle}}{m_{e^-}}\ s(1)$	$n \in \mathbb{N}$	$R_{aligned} = s(n) = n\left(2 - \frac{1}{\sqrt{1+\frac{\pi^2}{n^2}}}\right)$	$W_{alignment} = \left(\frac{R_{unaligned}}{R_{aligned}} - 1\right) m_{electron} c^2$
H	1,007825031898	3117,07031	3117	3117,00158	11,2671 eV
O	15,994914619257	49470,16783	49470	49470,00010	1,7326 eV
H_2O	18,010564683053	55704,30845	55704	55704,00009	*2,8288 eV*
$(H_2O)_{13}$	234,137340879689	724156,00989	724156	724156,00001	**0,006972331 eV**
e^-	0,00054857990907	s(1)=1,69668…	1	s(1)	0 eV

Masses of the elements (H, O) and e- are taken from reference [5] and other parameters calculated. The $(H_2O)_{13}$ cluster alignment energy is the lowest amongst first 100 water cluster alignment energies what prefers its formation. Due to more precise values of atom masses [5] taken into account in present calculations the given alignment energy value of about 0.007 eV is lower than previously calculated one of 0.016 eV [1].

3. The Hydrogen Subtle Touch Stabilisation Energy in H_2O on the Temperature Interval from 0°C to 100°C

The original orbit length s(n) – measured in Compton wavelengths of the electron λ_e – can be attributed to Hydrogen orbital energy in H_2O satisfying Bohr relation $E = \frac{\alpha^{-1}R_y}{s(n)}$ where [2]:

$\alpha^{-1} = 137.035\ 999\ 084$

$Ry = 13.605\ 698\ 0659\ eV$

$n = Hydrogen\ original\ orbit\ number$

$s(n) = Hydrogen\ original\ orbit\ length\ on\ double\ surface$

$$s(n) = n\left(2 - \frac{1}{\sqrt{1-\frac{\pi^2}{n^2}}}\right), \qquad n \in \mathbb{N}\ or\ \frac{\mathbb{N}}{2} \tag{1}$$

Keeping the water orbital energy untouched the Hydrogen original orbit length s(n) can be transformed into twice longer Hydrogen subtle touch orbit length 2 x s(n)

$$s(n) \to 2\,x\,s(n) = s(m) = m\left(2 - \frac{1}{\sqrt{1-\frac{\pi^2}{m^2}}}\right), \quad m \notin \mathbb{N} \tag{2}$$

To become stable the given subtle touch orbit length 2 x s(n) should be contracted to s(2n):

$$2\,x\,s(n) \to s(2n). \tag{3}$$

The subtle touch stabilisation by the means of orbit length contraction is accompanied by the local release (inside zero enthalpy of transformation) of energy:

$$\Delta E = \alpha^{-1}Ry\left(\frac{1}{\frac{2x\,s(n)}{2}} - \frac{1}{\frac{s(2n)}{2}}\right) < 0. \tag{4}$$

Taking into account the Hydrogen orbit numbers in H_2O from n = 98 to n = 103.5 on the interval from 0°C to 100°C [3] the Hydrogen subtle touch stabilisation energies are calculated and presented in Table2.

Table2. *Hydrogen subtle touch stabilisation energies in H_2O at the temperature range from 0°C to 100°C compared to $(H_2O)_{13}$ cluster alignment energy of about 0,007 eV*

	Temperature (°C)	H original orbit number (n)	Hydrogen subtle touch stabilisation energy in H_2O		$(H_2O)_{13}$ cluster alignment energy (eV)
12	**100**	**98**	**0,007320005**	**>**	**0,006972331**
11	**90,91**	**98,5**	**0,007209214**	**>**	**0,006972331**
10	**81,82**	**99**	**0,007100648**	**>**	**0,006972331**
9	**72,73**	**99,5**	**0,006994250**	**>**	**0,006972331**
	70,83	**99,604265**	**0,006972332**	**>**	**0,006972331**
8	63,64	100	0,006889967	<	0,006972331
7	54,55	100,5	0,006787747	<	0,006972331
6	45,45	101	0,006687537	<	0,006972331
5	36,36	101,5	0,006589291	<	0,006972331
4	27,27	102	0,006492958	<	0,006972331
3	18,18	102,5	0,006398494	<	0,006972331
2	9,09	103	0,006305854	<	0,006972331
1	0	103,5	0,006214992	<	0,006972331

We can see from Table2 that the Hydrogen subtle touch stabilisation energy and $(H_2O)_{13}$ cluster alignment energy yield approximately the same value from 0.006 eV to 0.007 eV. However, the Hydrogen subtle touch stabilisation energy in H_2O at temperatures below 70,8 °C is lower than $(H_2O)_{13}$ cluster alignment energy so it does not disturb the existence of such clusters. Contrarily, the

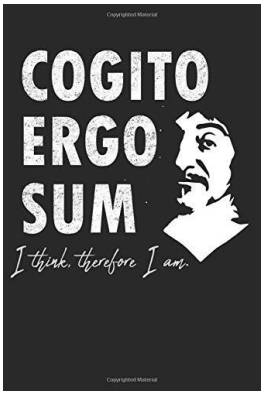
Hydrogen subtle touch stabilisation energy in H_2O at temperatures above 70,8 °C is higher than $(H_2O)_{13}$ cluster alignment energy so it does disturb the existence of such clusters. The appearance of bubbles in water at 71°C [6] coincidently announces the change in energetic affection which disfavours the existence of $(H_2O)_{13}$ cluster. At the same time from the biological point of view the possible use of $(H_2O)_{13}$ cluster energy for ATP formation from ADP may be lost [2].

4. CONCLUSION

Do not overestimate the theory and underestimate coincidences

DEDICATION

To René Descartes and his famous saying [7]:



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