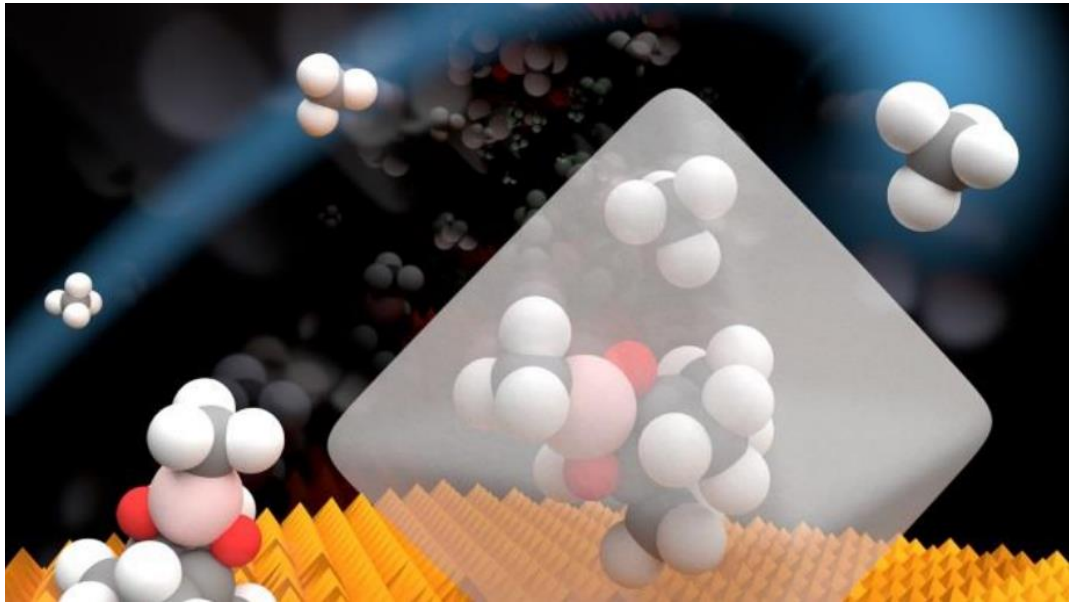


Isotope theory (hypothesis)



Isotopes are varieties of atoms of the same chemical element that have the same atomic number, but different masses. What surprises us is that one element can have a large number of isotopes.

The initial elements of the periodic table may differ, often by only one nucleon (potassium and calcium, for example) or may even have the same number of nucleons (calcium and argon) and, at the same time, be very different from each other. And here - the same element can have up to 10 isotopes and stay yourself at the same time. For example, calcium can have from 40 to 48 nucleons and remain the calcium.

This, of course, can be explained classically: all isotopes have the same number of "valence" electrons responsible for external bonds. But, the role of electrons, which are thousands of times smaller than nucleons, is somehow greatly exaggerated.

Isotopes are detected using mass spectrometers, in which a stream of elementary nuclei passes through electrical deflector plates (magnetic deflector plates). It is believed that the charge of the nucleus is the same for all isotopes. Consequently, nuclei with a larger mass, as more inert, will be deflected more weakly by the deflecting plates of the electric field.

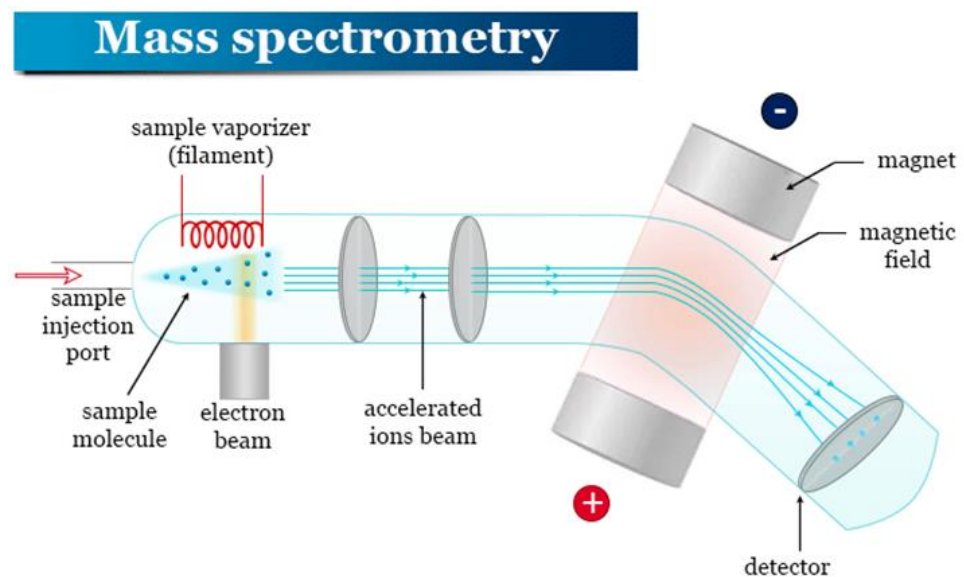


Fig.1

I have a hypothesis that, in fact, the nucleus of any chemical element has only one, unique and unique configuration. And the different weight of its "isotopes" is explained by its spatial asymmetry, different angles, so to speak, sides under which it flies through the mass spectrometer plates.

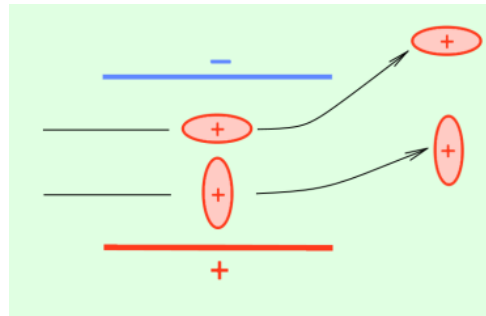


Fig.2

It was shown above that electric forces, as well as all others, have a gravitational nature. Large particles - nucleons, are attracted to smaller particles - electrons, but not because some have a positive charge while others have a negative one. There are no electric charges - there are different sizes of elementary particles! Particles of the same size are repelled, particles of different sizes are attracted.

Thus, the force acting on a nucleus flying between the plates depends on its foreshortening, on its area "visible" to the deflecting plates of the spectrometer. The upper particle in Fig.2 has a larger area facing the spectrometer plates than the lower particle. Therefore, it is, shall we say, more "positive" than the lower one and, therefore, will be more deflected upward.

Work was carried out to determine such an area of the nuclei under all their possible foreshortening. Moreover, more attention was paid to the elements with the most contrasting percentage of isotopes (for greater clarity and credibility). For this, photographs of these nuclei were taken from a sufficient height (for the parallelism of the projection rays). Then, the area bounded by the contour of the projection of the nucleus was determined. For example, projections of only two positions of the same nucleus are shown by Fig.3.

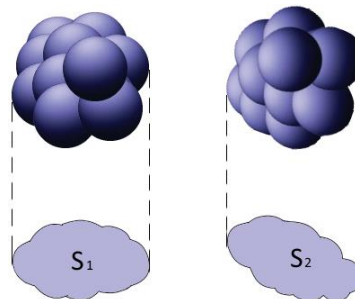


Fig.3

The areas of all possible projections of the nucleus were determined in the same way. For a sphere, such a distribution will represent a vertical line (whatever one may say - the projection is the same). For a shape close to a sphere, namely, an ellipsoid or an ovoid, the distribution of projections is divided into two groups: equal or unequal.

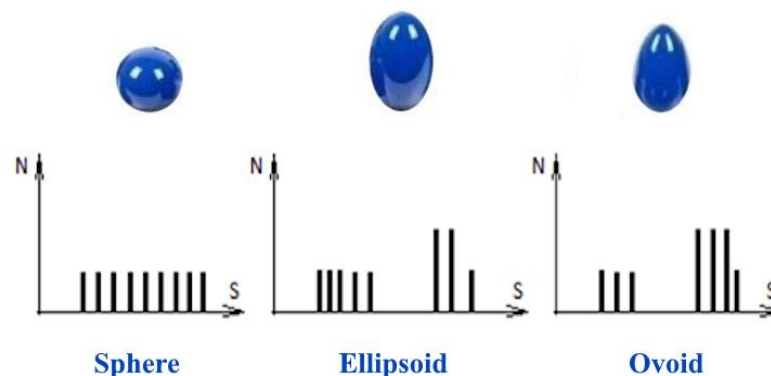


Fig.4

If you look at the table of isotopes, you can see that elements with odd ordinal numbers either have no isotopes at all, or have two isotopes with approximate distributions: 50/50, 60/40, 70/30.

Isotope abundance table

1 H 1 99,988 2 0,012																	2 He 3 0,000137 4 99,999863																																
3 Li 6 7,59 7 92,411	4 Be 9 100	5 B 10 19,9 11 80,1	6 C 12 98,93 13 1,07	7 N 14 99,632 15 0,368	8 O 16 99,767 17 0,038 18 0,195	9 F 19 100	10 Ne 20 90,48 21 0,27 22 9,25	11 Na 23 100	12 Mg 24 78,99 25 10,00 26 11,01	13 Al 27 100	14 Si 28 92,230 29 4,683 30 3,087	15 P 31 100	16 S 32 94,93 33 0,74 34 4,29 36 0,02	17 Cl 35 75,77 37 24,23	18 Ar 36 0,337 38 0,063 40 99,599	19 K 39 93,258 40 6,012 41 0,730	20 Ca 40 96,941 42 0,047 43 0,135 44 2,086 46 0,004 48 0,187	21 Sc 45 100	22 Ti 46 8,25 47 7,44 48 73,72 49 5,43 50 5,10	23 V 50 0,250 51 99,750	24 Cr 50 4,345 52 83,769 53 9,501 54 2,385	25 Mn 55 100	26 Fe 54 5,845 56 91,754 57 2,119 58 0,282	27 Co 58 68,077 59 26,223 60 5,340 62 3,634 64 0,928	28 Ni 58 68,077 59 26,223 60 5,340 62 3,634 64 0,928																								
29 Cu 63 69,17 65 30,83	30 Zn 64 48,61 66 27,99 67 4,10 68 18,75 70 0,82	31 Ga 69 60,399 71 39,601	32 Ge 70 20,84 72 27,54 73 7,73 74 36,28 76 7,61	33 As 75 100	34 Se 74 0,89 76 9,37 77 5,63 78 33,77 80 49,61 82 0,73	35 Br 79 50,69 81 49,31	36 Kr 78 0,35 80 2,38 82 11,59 83 11,49 84 57,60 86 27,59	37 Rb 85 72,17 87 27,83	38 Sr 84 0,56 86 9,86 87 7,08 88 82,18	39 Y 89 100	40 Zr 90 51,45 91 10,22 92 17,55 94 17,58 96 2,80	41 Nb 93 100	42 Mo 92 14,84 94 9,25 95 15,92 96 16,68 97 9,51 98 24,13 100 5,63	43 Tc 99 100	44 Ru 96 5,54 98 1,87 99 18,74 100 12,60 101 17,68 102 31,55 104 18,63	45 Rh 101 100	46 Pd 102 1,02 104 11,14 105 22,53 106 27,33 108 26,46 110 11,72	47 Ag 107 62,62 109 37,38	48 Cd 110 12,46 111 12,86 112 24,13 113 12,22 114 28,73 116 7,49	49 In 113 4,29 115 95,71	50 Sn 112 0,97 114 0,66 115 0,34 116 14,54 117 7,68 118 24,22 119 8,59 120 32,10 122 4,43 124 5,79	51 Sb 121 57,21 123 42,79	52 Te 128 0,09 129 0,09 130 0,05 132 0,05 134 4,74 135 7,07 136 18,84 138 31,74 138 34,08	53 J 137 100	54 Xe 124 0,09 126 0,09 129 1,92 131 20,44 132 4,06 134 23,08 136 28,09 138 18,64 136 8,87	55 Cs 133 100	56 Ba 135 0,206 136 0,181 137 12,047 138 6,982 139 7,854 137 31,232 138 71,689	57 (-71) La 139 99,930	58 Ce 138 0,251 140 11,136 142 11,136 144 36,845 146 33,609	59 Pr 141 100	60 Nd 142 0,274 143 11,136 144 23,81 146 17,62 148 26,98	61 Pm 147 100	62 Sm 147 15,7 149 14,08 150 14,31 152 26,64 154 26,63	63 Eu 151 47,81 153 52,19	64 Gd 152 0,027 154 2,084 155 14,80 156 20,26 157 25,38 158 22,05	65 Tb 159 100	66 Dy 156 0,06 157 1,39 158 13,24 159 14,51 160 26,26 162 25,78	67 Ho 163 100	68 Er 162 0,139 164 17,62 166 33,84 167 22,04 168 26,26 170 20,78	69 Tm 169 100	70 Yb 172 0,027 174 3,09 176 12,74 177 14,08 178 23,81 180 45,87	71 Lu 175 100	72 Hf 178 0,16 179 6,56 180 18,60 181 27,28 182 13,62 183 35,88	73 Ta 181 99,988	74 W 182 0,22 183 26,50 184 14,31 186 30,64 188 28,43	75 Re 185 37,08 187 62,92	76 Os 187 0,02 188 2,31 189 16,31 190 26,26 192 40,78	77 Ir 193 37,3 195 62,7	78 Pt 195 0,014 196 0,782 198 32,96 199 23,832 200 25,242 198 7,243
79 Au 197 100	80 Hg 196 0,35 198 9,87 199 16,87 200 23,18 201 35,18 202 29,86 204 6,87	81 Tl 203 29,524 205 70,476	82 Pb 204 1,4 206 24,1 207 22,1 208 52,4	83 Bi 209 100	84 Po 209 100	85 At 209 100	86 Rn 209 100																																										

Fig.5

But these, after all, are the distributions of our three types of spherical nuclei. And, in fact, when sculpting these odd elements, these are the shapes that emerge. Everything is simple with these spherical nuclei, but what about nuclei that have up to ten isotopes with a wide variety of percentages?

Fig.6 shows a histogram, where the x-axis is the area of the nucleus projection (S), and the ordinate is the frequency of occurrence of this area (N) for the nucleus of a boron atom with two isotopes **B10** (20% prevalence) and **B11** (80%)

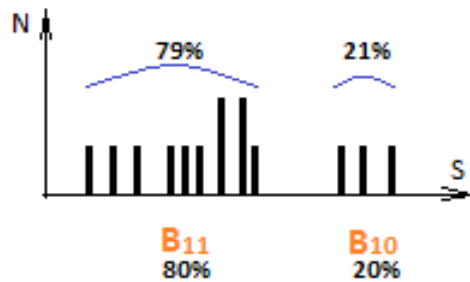


Fig.6

Two groups of area distributions are clearly visible at different foreshortening of the boron nucleus. Their frequencies of occurrence (79% and 21%), which corresponds to the percentage of occurrence of these isotopes in nature. Why do we only say "corresponds"?

The point is that a larger area of the nucleus corresponds to a larger electric charge. When the nucleus has such a large area facing the spectrometer plates, it deflects more strongly (Fig.2). In classical spectrometry, a stronger deflection of the nucleus is interpreted in such a way that this nucleus has a lower mass (the charge of the nucleus, after all, in the classics it is assumed to be the same for all isotopes). That is why a larger area corresponds to an isotope with a lower mass.

The boron atom has a simple isotope distribution. What about more complex atoms? Yes, exactly the same. Look at the histogram of the areas of zinc nuclei and see for yourself!

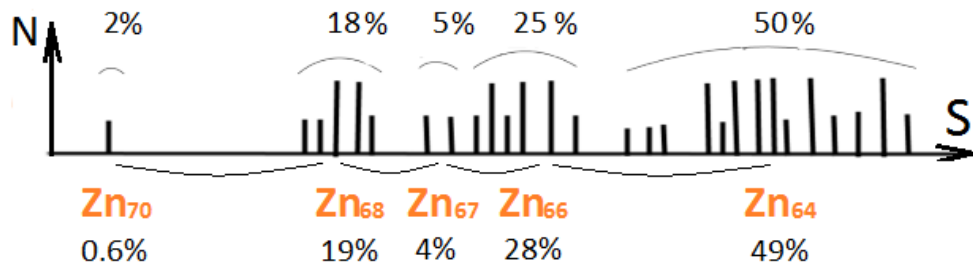


Fig.7

Below the graph is the percentage of isotopes in nature, and above the graph is the percentage distribution of the areas of these nuclei. Moreover, there is another coincidence here. Adjacent isotopes have a weight difference of 1 or 2 AMU (70-68-67-66-64). In the same way, the centers of neighboring groups of areas are separated from each other by corresponding distances (see lengths of the lower arcs).

Thus, there are no five zinc isotopes with different masses, but there are five characteristic foreshortening of the zinc nucleus.