Additional Proofs to the Necessity of Element No.155, in the Periodic Table of Elements

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Additional versions of the location of the isotopes and element No.155 are suggested to the Periodic Table of Elements.

As was pointed out recently [1], the Periodic Table of Elements ends with element No.155 which manifests the upper limit of the Table after whom no other elements exist. In this connexion the number of the isotopes contained in each single cell of the Nuclear Periodic Table could be interested. (The Nuclear Periodic Table is constructed alike the Periodic Table of Elements, including Periods, Groups, Lanthanides, and Actinides.) Therefore, it is absolutely lawful to compare these two tables targeting the location of element No.155 [2].

Fig. 1 shows an S-shaped arc of the isotopes, whose form changes being dependent on the number of Period, and the number of the isotopes according to the summation of them. As seen, the arc is smooth up to element No.118, where the number of the isotopes of the cell equals to 4468. This is the known last point, after whom the arc transforms into the horizontal straight. In the region of the numbers 114–118, the rate of change of the isotopes in the arc decreases very rapid (4312–4468), upto element No.118 whose cell contains just one isotope. Hence we conclude that only the single isotope is allowed for the number higher than No.118. This was verified for the points No.118, No.138 and No.155, who are thus located along the strict horizontally straight. The common arc can be described by the equation, whose truth of approximation is $R^2 = 1$.

The next version of the graph is constructed by logarithmic coordinates, where the x-coordinate is $\ln X$ and the y-coordinate is $\ln Y$ (see Fig. 2). The original data are: the number Z of each single element (the axis X), and the summary number of the isotopes (the axis Y). Once the graph created, we see a straight line ending by a curve. As seen, the last numbers form a horizontally located straight consisting of the 10 last points. The obtained equation demonstrates the high degree of precision ($R^2 = 0.997$).

The most interesting are the structures, where the two arcs (No.55–No.118) coincide completely with each other. The left side of the parabolas in the tops forms two horizontal areas of 10 points. The two dotted lines at the right side are obtained by the calculations for elements being to 0.5 unit forward. The both equations posses the coefficient $R^2 = 0.992$.

All three presented versions of the distribution of the isotopes in the cell No.155 show clearly that this number should exist as well as element No.155.

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References

1. Khazan A. Upper Limit in Mendeleev's Periodic Table — Element No.155. American Research Press, Rehoboth (NM), 2012.
2. The Nuclear Periodic Table, — http://www.radiochemistry.org/periodictable/images/NuclearPeriodicTable-300doi.jpg

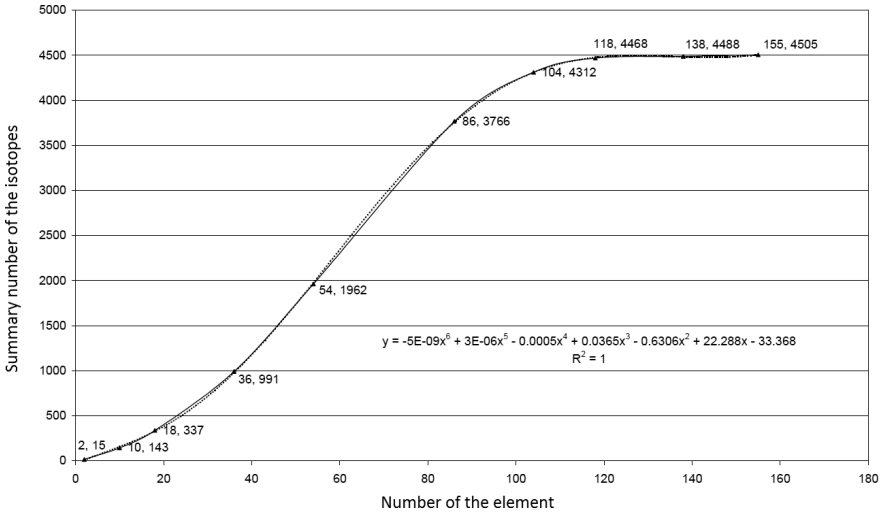

Fig. 1: Dependency of the summary number of the isotopes on the number of the element.

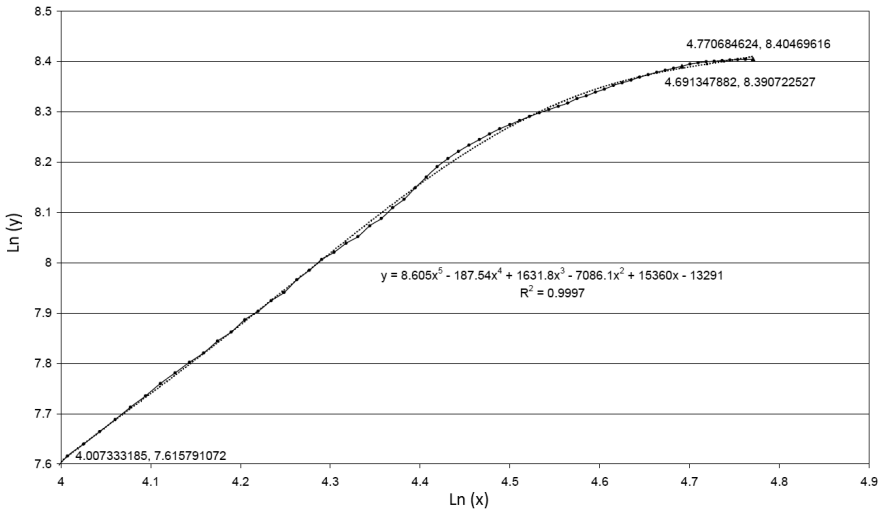

Fig. 2: Dependency of Ln (y) on Ln (x).

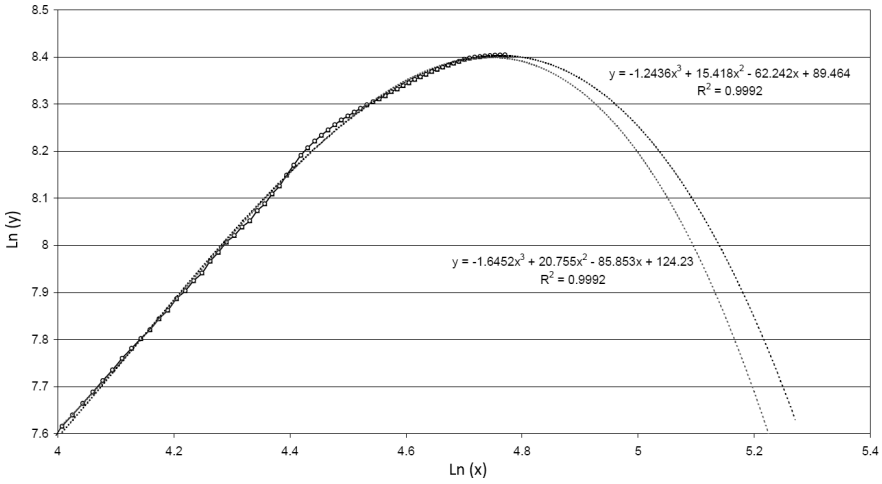

Fig. 3: Dependency of Ln (y) on Ln (x).