Nuclear Laws of Molecules

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Abstract

Years after all chemical elements were given theoretical nuclear shapes, several proposed laws of nature seem to be credible. Elements after boron have a cubic stack of protons and neutrons in their cores. Most molecular bond angles are influenced by these central, cubic, rectilinear axes. This is finite crystallography. The cube results in a hexagonal close-pack of nucleons on nuclear surfaces. Experiments with beads showed that protons touch protons, and that makes longer lines of multiple protons. Most chemical bonds start at the ends of lines of protons. A digital database of bond fulcrum vectors are provided for light elements. The water bond angle is solely a nuclear effect. Elements from carbon to manganese have exactly two protons in their cubes. The chemical valence limit of eight is due to the theory that there are four or fewer lines of protons existing in any stable element. These laws result in stable nuclear shapes. Positional coordinates are provided for all neutrons and protons in all chemical elements.

Background Information

Before nuclear shapes were defined in The Static Nucleus Theory of the Face-Armored Cubic Lattice [1], researchers hoped that magic numbers of protons and neutrons (nucleons) would provide insights into atoms. Those past efforts did not define whether nuclei were dynamic in shape or static, with fixed locations of all nucleons. Goals were not set for quark theories to guide molecular teachings.

Laws of Molecules

- There is a cubic stack of nucleons in the centers of atoms from carbon to oganesson.
- Protons touch protons in stable elements. Protons make lines of protons [2].
- Two protons are in each nuclear cube from carbon to manganese.
- Each molecular bond usually starts at the end of a line of protons.

Discussion of the Proposed Laws of Nature

A **c**ubic stack of spherical nucleons is in the center of atoms from carbon to the heaviest elements. The cubic lattice affects bond angles in molecules. The cube forces the nuclear surfaces to use hexagonal close-pack (HCP) of nucleons for most elements. The small gaps between spheres in the HCP surfaces allow semi-eternal survival for many elements.

Protons make lines of protons outside of the cube. The bond fulcrum vectors [3] of all elements are ready, up to scandium, in Table 4. Each line has two ends. Some elements have up to 23 protons in a line (Table 3, bismuth [3]). Iron was the first element to be evaluated as follows: the symmetrical cube has its six faces covered by symmetrical piles of armoring nucleons. The armor has lines of protons that connect to other lines, commonly. The big gaps in the cube are protected by six piles of nucleons.

Two protons are in the cube in chemical elements from C to Mn. A transition occurs after Mn so Fe has eight protons in its cube. The two inner electrons of light elements are related to the two inner protons. In the cube, protons do not touch protons. See Fig. 1: the oxygen cube protons are visible.

Each molecular bond usually starts at the end of a line of protons. Rings can have bonds where no ends of lines exist. The outstanding protons in rings make bonds. Rings of protons help electrons to easily penetrate the nucleus.

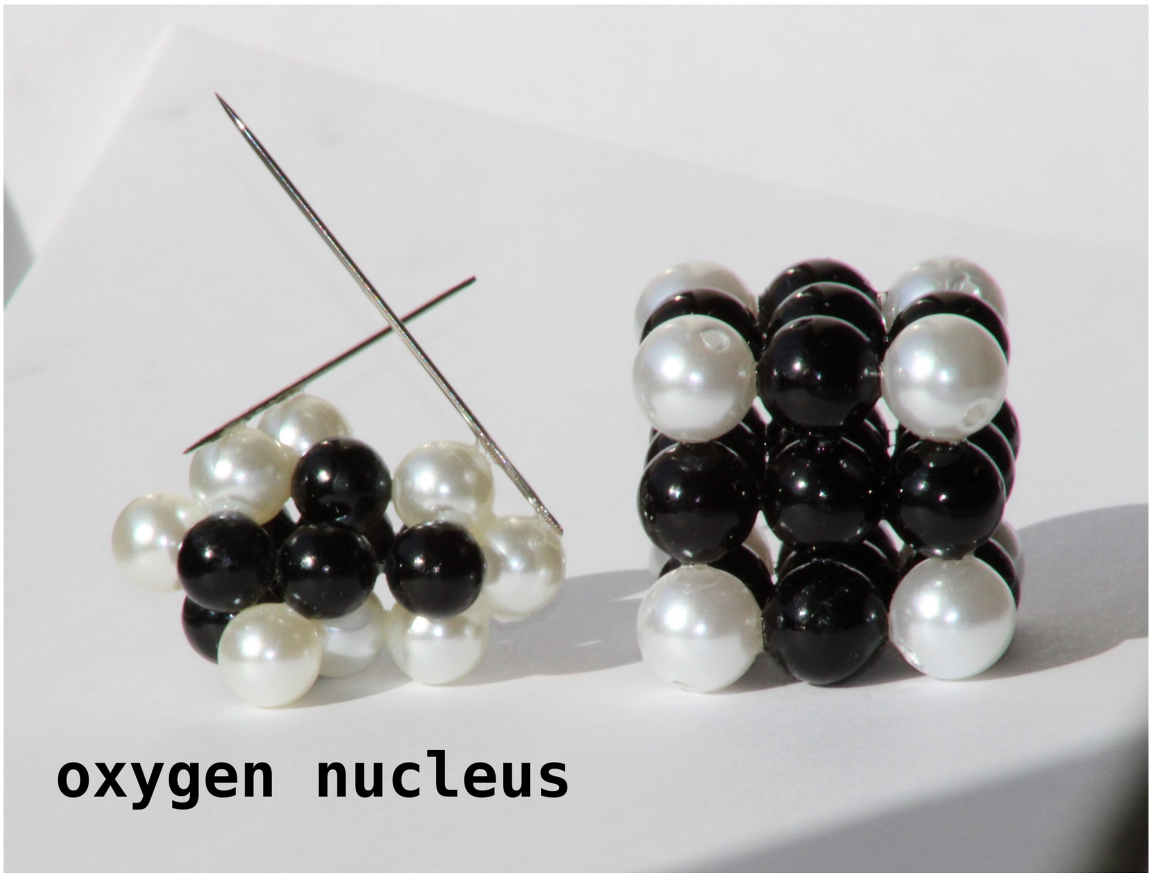

Figure 1: water bond angle arccosine(-1/4) from oxygen nuclear shape [4], cube for Fe, protons shown with white beads, neutrons are black

References

[1] nuclear-data.com (2024) Rules of Nuclear Shapes, coordinates of 17,000 nucleons

[2] Charge Distributions on the Nuclei, book by Alan Folmsbee (2022)

[3] Table 1 to Table 4 https://nuclear-data.com/2024/02/10/goals/

[4] Paper #7 water bond angle https://nuclear-data.com/papers/