

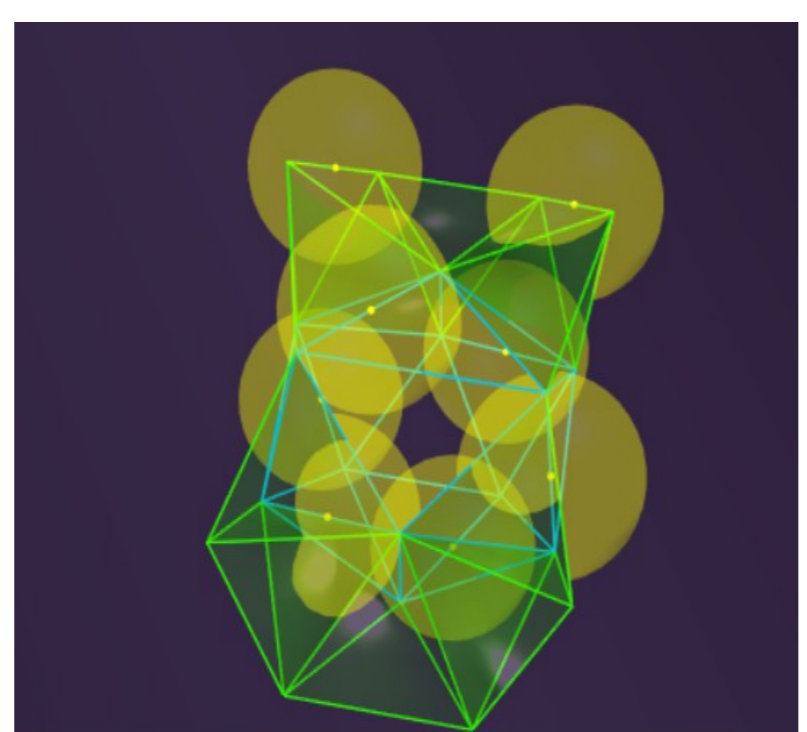
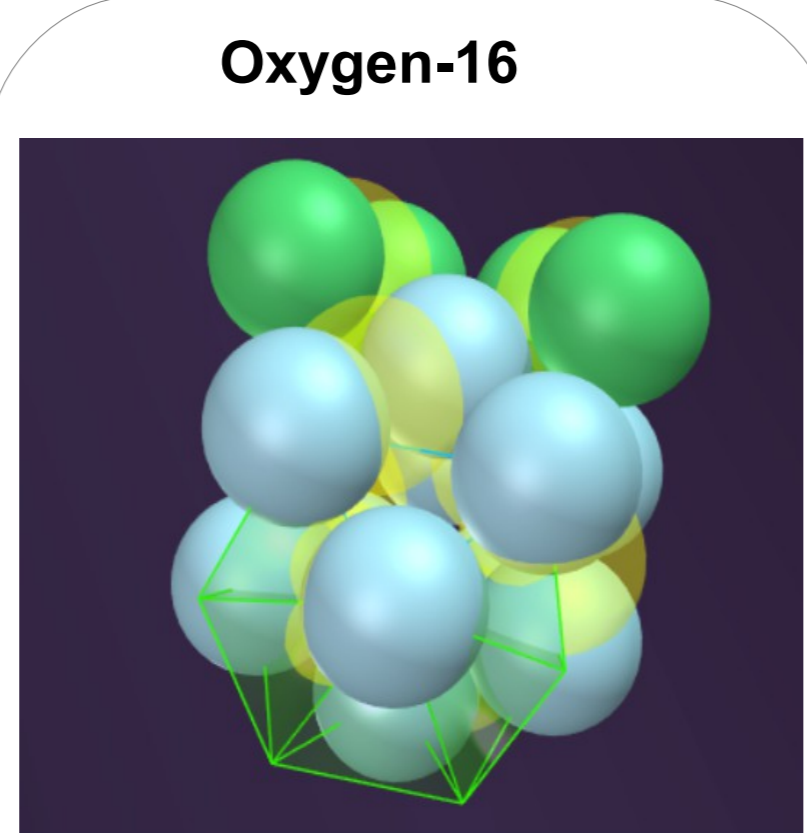
# The Structured Atom Model © (SAM)

## Summary of the Structured Atom Model (SAM)

**SAM shows how the periodic table grows in a logical, tree-like fashion with natural termination points for the branches. It is shown that neighboring atoms and isotopes exhibit a structural relationship which is quite predictable, logical and verifiable.**

## Major Postulations of SAM

- SAM postulates that there must be organization and structure to the nucleus and that this structure determines the properties of the elements.
- The SAM models the nucleus in accordance with properties found in the Periodic Table of the Elements (PTE) – e.g. valence, neutron/proton ratio, atomic weight, stability and decay schemes.
- Stable elements have a stable structure. The nucleus does not change without cause.
- The SAM is based on three simple concepts: a) a single organizing (electric) force, b) the principle of densest packing, and c) the tendency of nature to prefer specific geometric arrangements - the platonic solids.
- The nucleus is made from **clusters of nucleons** which we have named **nuclets**.
- Nuclets combine in a tree-like fashion to create the larger elements. **Fusion reactions** can be explained by combining nuclets. **Fission reactions** are explained by breaking nuclei apart or breaking-off of nuclets from the main structure.
- The SAM is predictive, e.g. the geometry of the nucleus determines whether an element is a metal, halogen or noble gas for example.
- The SAM shows why some elements are stable, how they decay into other elements or isotopes, and why elements are abundant or rare.
- The SAM is a structural, not a mathematical theory – the basic theory is simple, intuitive and well-suited for educational purposes. Being able to build the nucleus with magnets, hold it in your hands, and marvel at its beauty brings the fun back to chemistry!



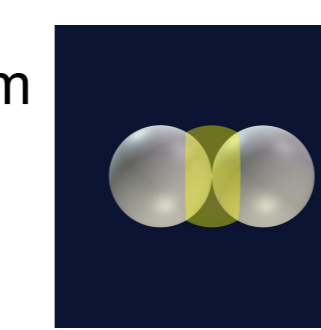
Protons hidden to reveal electron distribution and the underlying geometry



Oxygen built with spherical di-polar magnets which mimic the sub-atomic structure

## The New Neutron

- A free neutron is an unstable 'particle' that cannot exist by itself indefinitely. When removed from the nucleus a neutron spontaneously decays into a proton and an electron with a half-life of 15 minutes.
- In SAM we consider the **free neutron** as an unstable proton/electron pair, held together by electromagnetic forces – no weak force is required.
- The SAM depicts the **nuclear neutron** as a proton that shares its electron with other protons in the nucleus – most often with one other proton in a **'Deuterium pair'**.
- Nuclear electrons have been theorized for most of the 20th century, but were voted down at the 1933 Solvay conference in favor of the Rutherford-Bohr model.



**Deuterium**  
2 Protons  
1 Electron

## Fission

**SAM has been able to identify where and how much energy is potentially available to be released during fission processes for all elements. This effect occurs above Iron and is essentially a repelling force which we call Stress-Energy. It occurs when the branches of the nucleus start to interfere with each other.**

## Periodicity of the Periodic Table

The periodic table is arranged such that elements with similar properties are in the same column or group. The SAM shows why elements of the same group have the same active ending.

### Alkali Metals Group I

Each has one active red 'lithium' nucleot



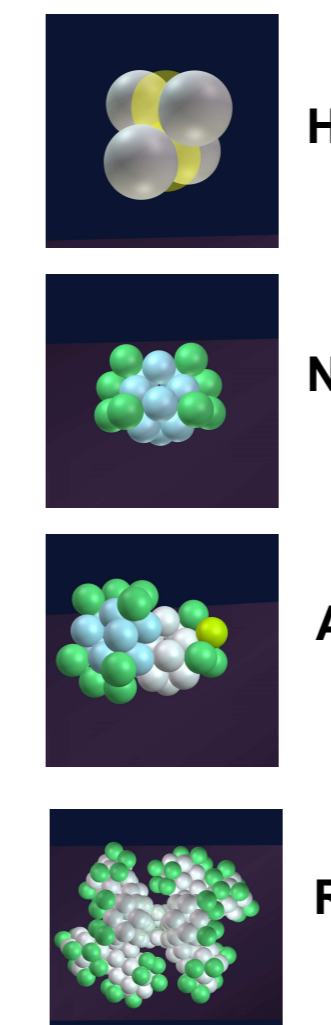
### Carbon Group XIV

Each has one active blue 'carbon' nucleot.



### Noble Gases Group XVIII

All endings are green which means they are neutral or inert.



## Ethereal Matters Mission

<http://etherealmatters.org>

The *Ethereal Matters* website is focused on bringing scientists together to discuss, scrutinize and advance the *Structured Atom Model*. We provide interactive web-based software tools which demonstrate the theory in 3D for research and educational purposes.

## Software Tools

- The **Atom Builder** is an interactive 3D web program which enables researchers to model the nucleus according to SAM.
- The **Atom Viewer** displays the atoms created with the Atom Builder.
- Atom-fizzer** – A module which allows the user to detach branches (parts) of the nucleus, in effect performing fission simulations.
- 3D Periodic Table** – Rearranges the PTE to show different growth paths of the elements.
- Future modules include:**
- The **Chemist** – A Program which demonstrates how SAM can explain chemical reactions through geometry.
- Atom Educator** – A program to teach chemistry and physics and allows the use model any type of nuclear reaction.
- Complete data sets with direct correlation and link to the structure of the nucleus



## Future Research

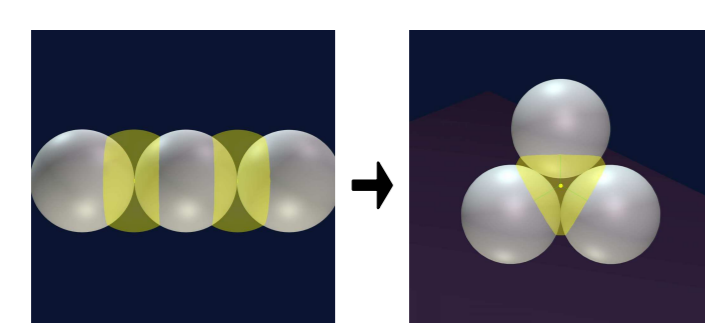
- Identify structure isotopes
- Determine how nuclear structure dictates the nuclear spin.
- Identify potential LENR reactions.
- Determine location and behavior of nuclear electrons.
- Correlate Orbital electron arrangement based on the nucleus its structure
- Fission and Fusion (presentation ICCF22-2019)**
- Mass-defect / Binding Energy (presentation ICCF22-2019)**

## SAM Demonstrates Four Different Types of Nuclear Reactions

### Radioactive Decay

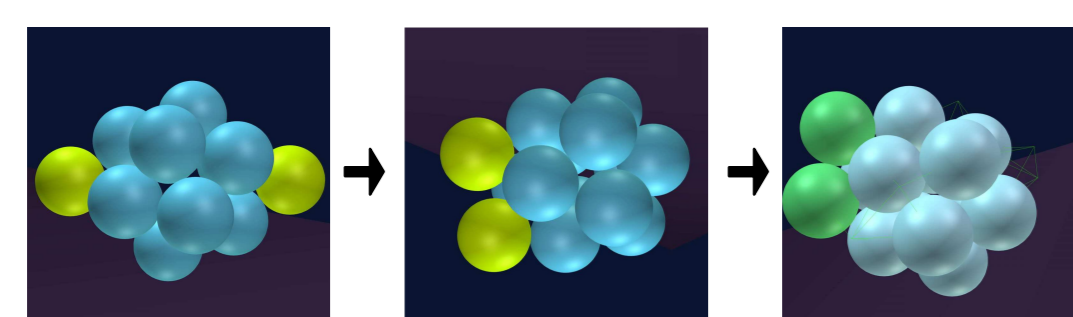
Electron emission from the nucleus

Tritium T(3) decay to Helium He(3)



Tritium decay, a change in inner / outer electron ratio

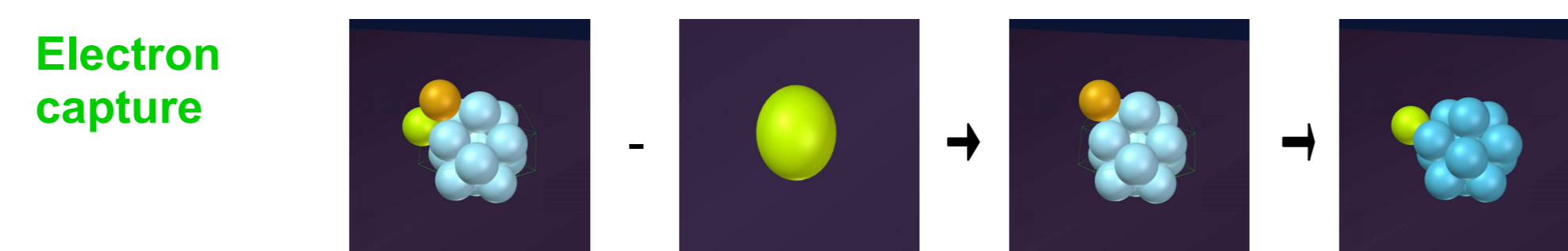
Carbon C(14) decay to Nitrogen N(14)



Carbon 14 decay, a change in inner / outer electron ratio

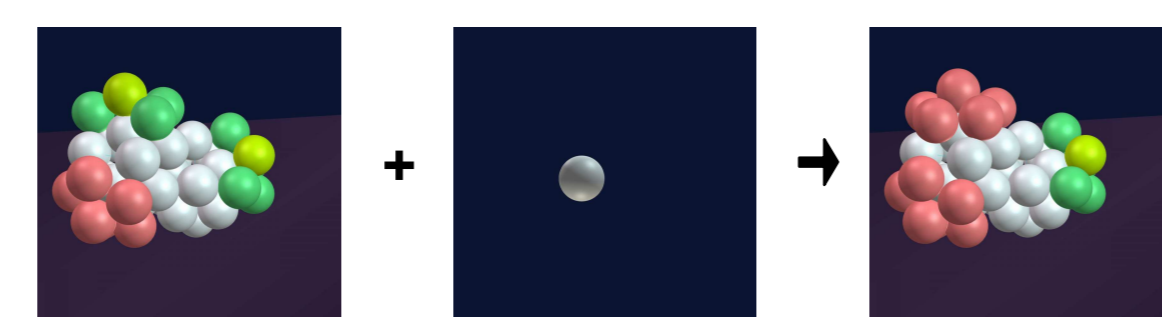
### Electron and Proton Capture

Nitrogen N(14) – neutron n(1) → Nitrogen N(13) → Carbon C(13)



Electron capture

Potassium K(39) + Hydrogen H(1) → Calcium Ca(40)

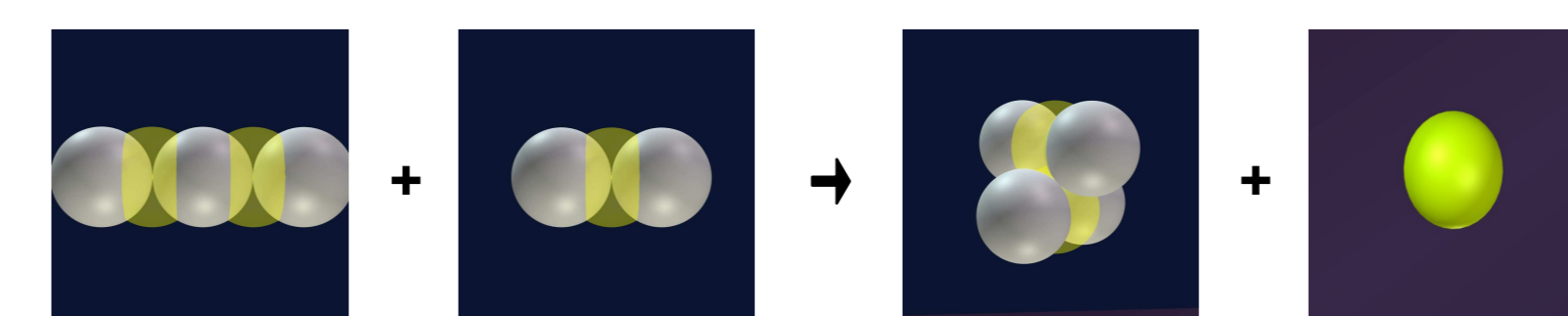


Proton capture

### "Hot" Fusion

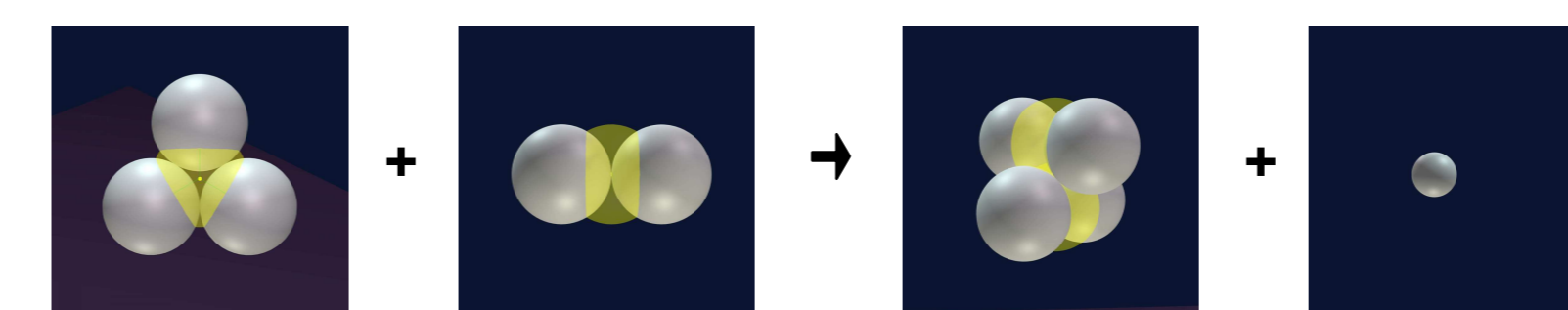
Electron state change (inner ↔ outer electron)

Tritium T(3) + Deuterium D(2) → Helium He(4) + free neutron (1)



Hydrogen H(1) (proton + outer electron)

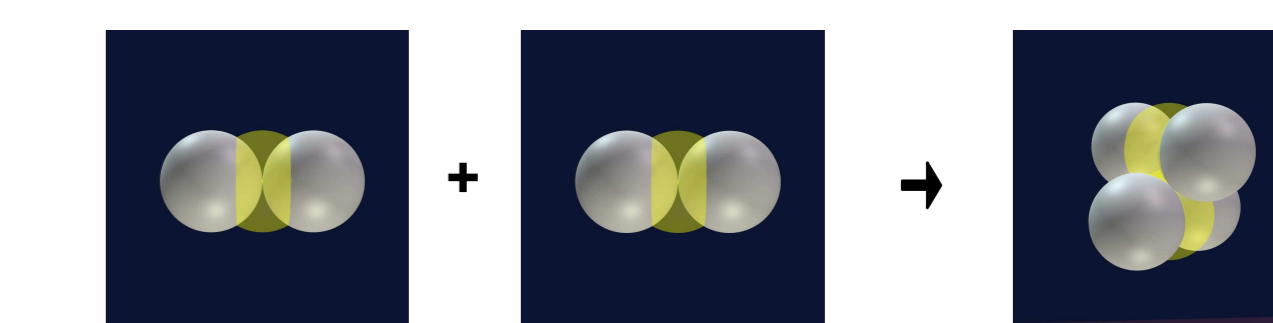
Helium He(3) + Deuterium D(2) → Helium He(4) + proton (1)



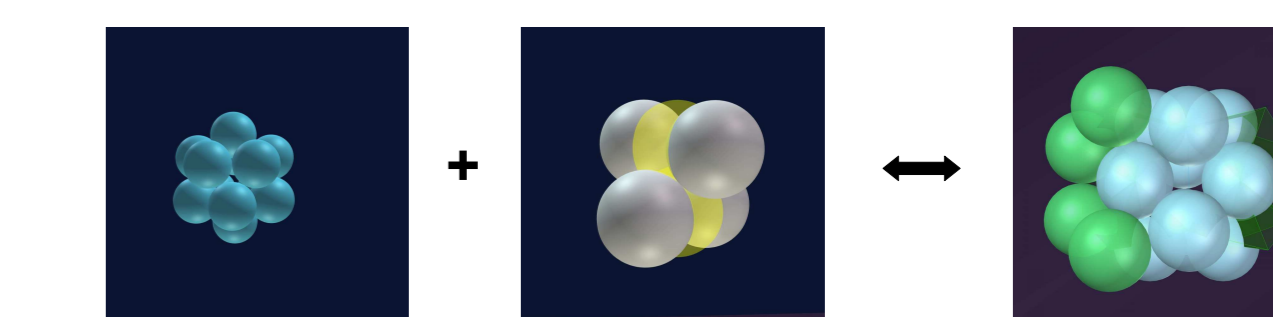
### Cluster Fusion and Fission

Combining the Deuterium nuclets – (No change of inner or outer electron ratio)

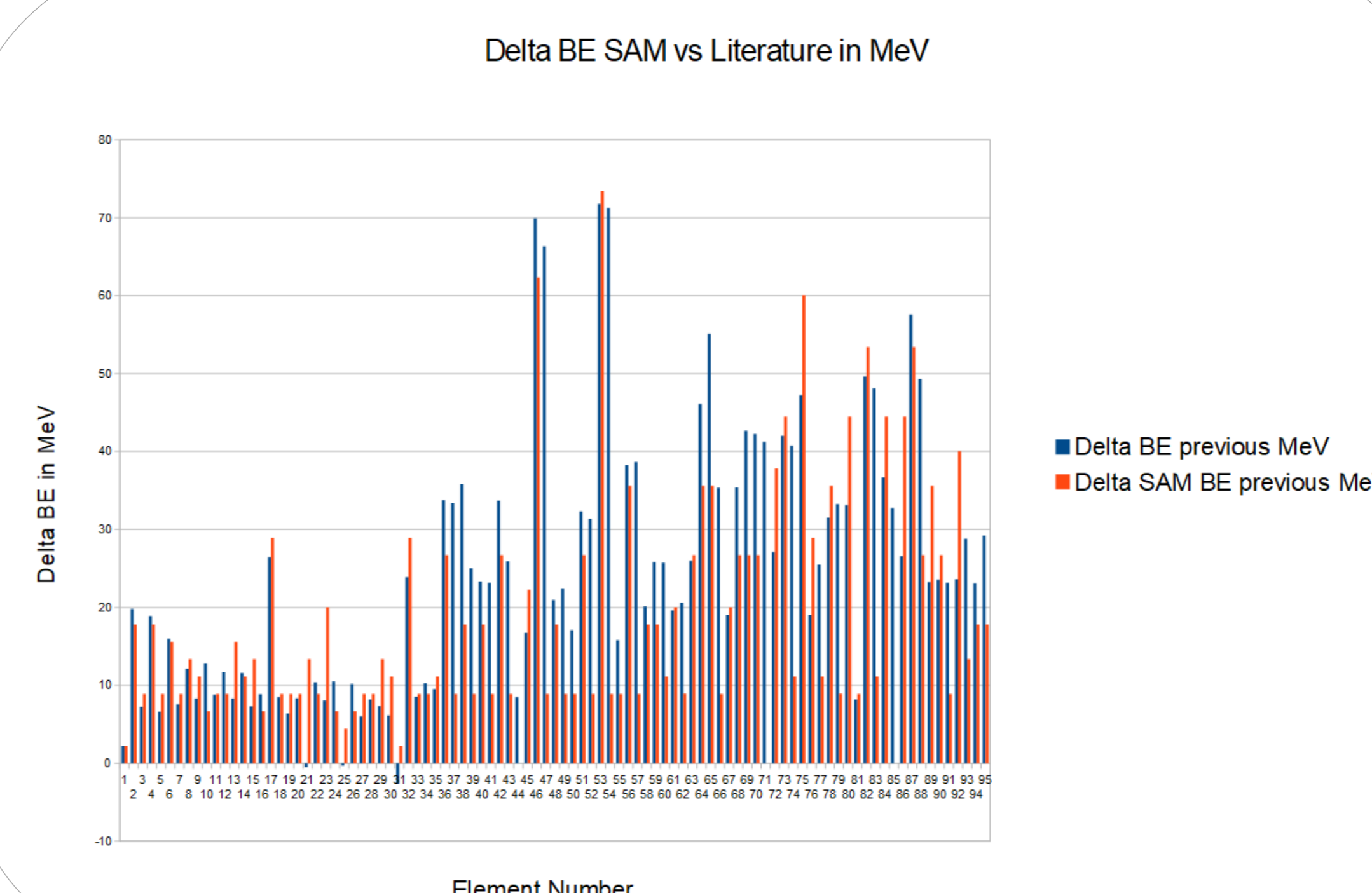
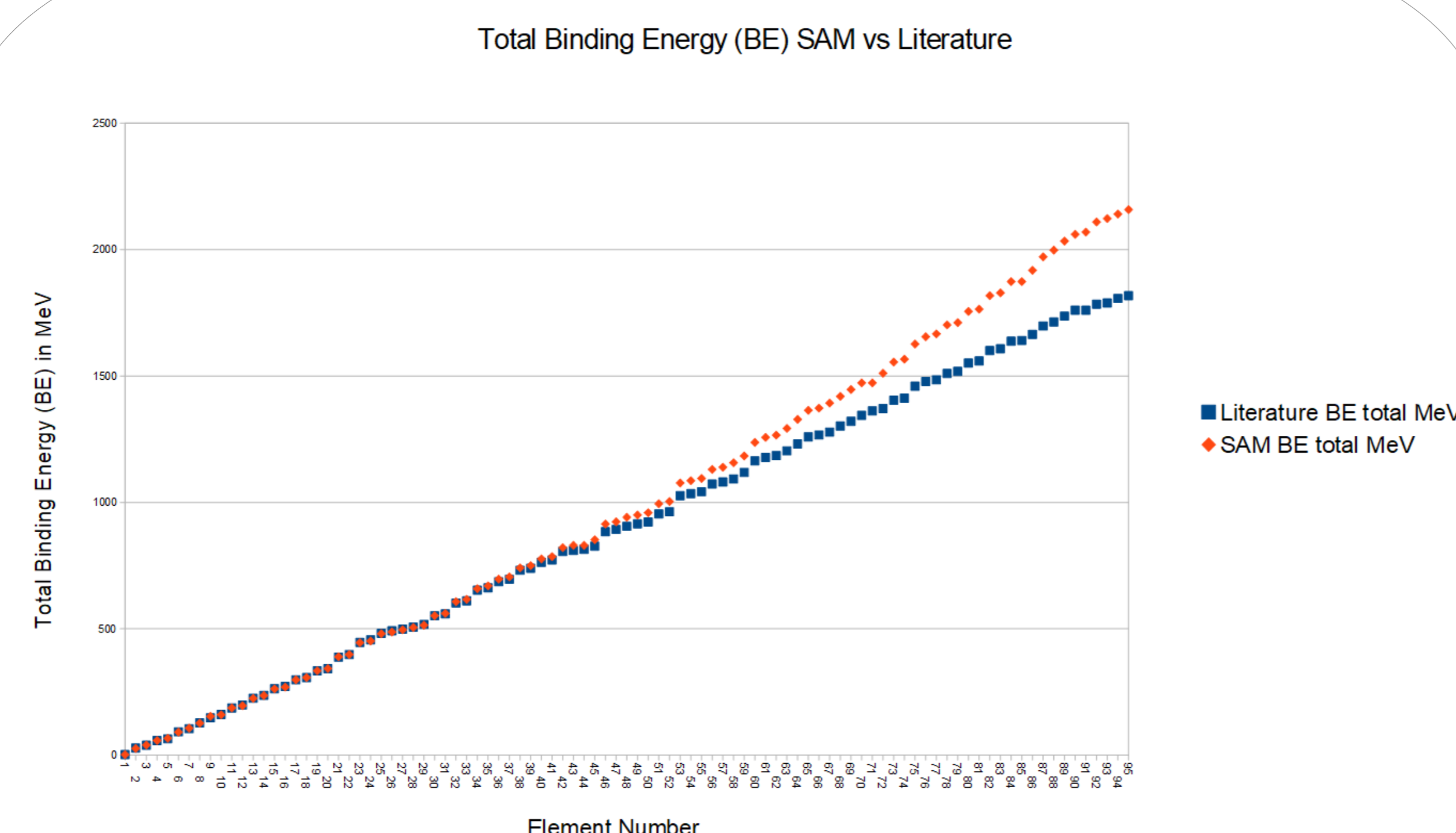
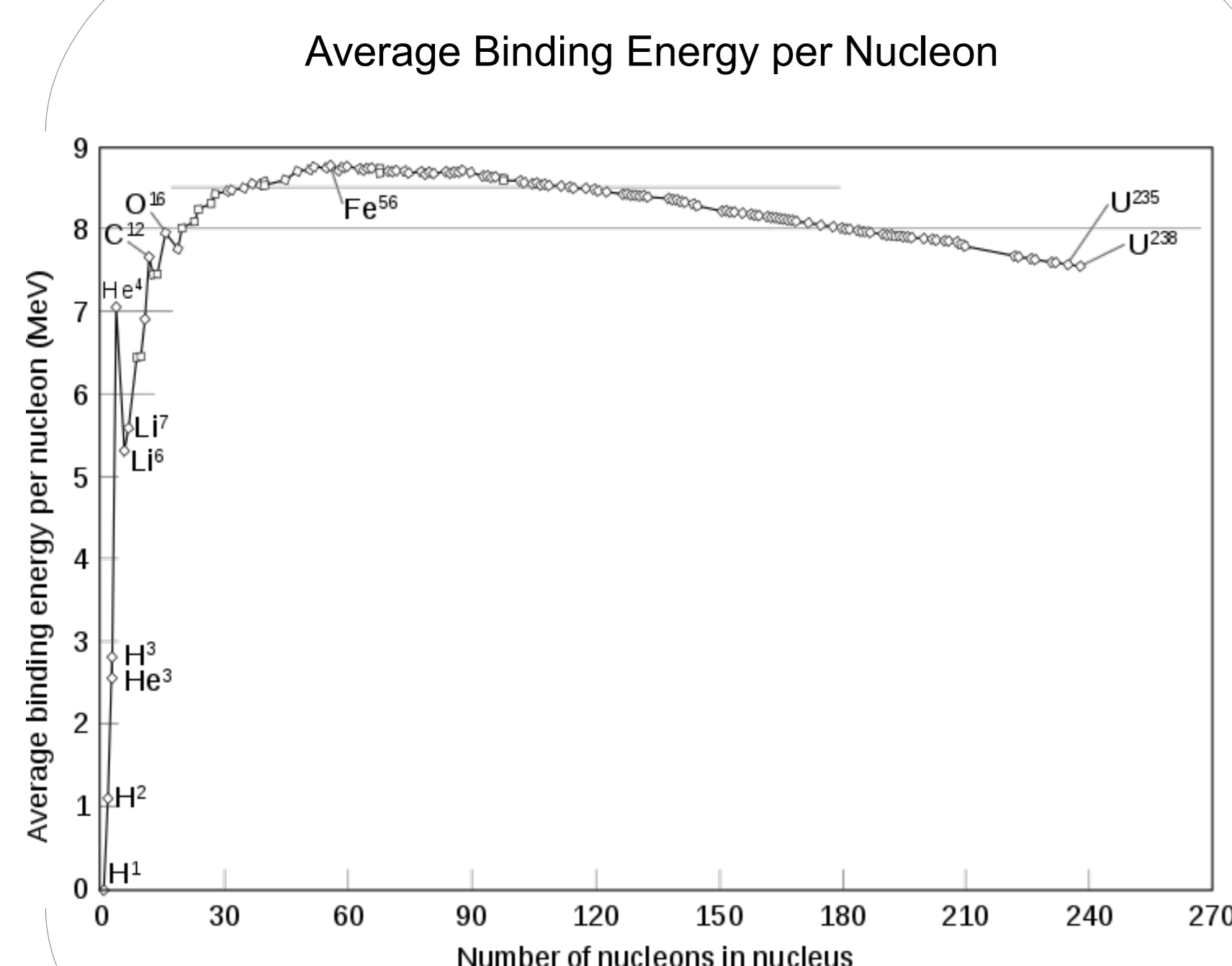
Deuterium H(2) + Deuterium H(2) → Helium He(4)



Carbon C(12) + Helium He(4) ↔ Oxygen O(16) ?



## Binding Energy, Mass Defect and the Relation to the Structure.



*"We have a duality which we call a proton-electron pair with the electrostatic force acting between them. This force is the causal mechanism for the principle of densest packing that creates geometric shapes based on the platonic solids. These geometric shapes in a specific ordered sequence and number, create all the elements and their isotopes."*



**Ethereal Matters LLC**  
<https://etherealmatters.org/sam>

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The Structured Atom Model © (SAM) was developed by Edo. All depictions here are generated with the Atomizer-builder module developed by James.