International Journal of Multidisciplinary Research and Growth Evaluation.

Crystal Nucleation by First Molecules Union, Due to the Impossibility of Adding Crystalline Geometric Figures to the Geometric Figure Initially on Nucleus and Growth by Crystalline Network Adhesion to Nucleus

Angel Perez Sanchez
Universidad Pontificia Comillas ICADE, Spain

* Corresponding Author: **Angel Perez Sanchez**

Article Info

ISSN (Online): 2582-7138
Impact Factor (RSIF): 7.98
Volume: 07
Issue: 01
Received: 17-11-2025
Accepted: 16-12-2025
Published: 12-01-2026
Page No: 283-288

Abstract
We currently understand the basic mechanisms of crystallization, but when applying them to the reality of crystals, a number of questions arise regarding crystal lattices, crystal growth by addition of the crystal structure itself, nucleation, and atomic and molecular growth and proportions within the crystal structure. All these points will be addressed systematically, and ultimately, we will arrive at a homogeneous and reasonable general theory of crystallization based on the use of molecules, rather than the atom, as the building blocks of the crystal. The system used will be the analysis of existing crystallization theories, selecting only those models capable of explaining the crystal in its entirety, not just in parts.The true importance of this study lies not in the use of concepts such as addition, bonding points, or crystal lattices, as these have long been employed in crystallography. The truly novel aspect is having determined the precise moment when the crystal nucleus and the crystal's geometric shape are formed. This occurs when the first molecules come together, creating a geometric shape. Instead of adding more identical geometric shapes, this shape is covered by a crystal lattice composed of molecules. Logic dictates this crystal growth, as we have observed that some crystals, due to the complexity of their form, cannot grow by addition. Once addition is ruled out, the only remaining method is the covering of crystal lattices.

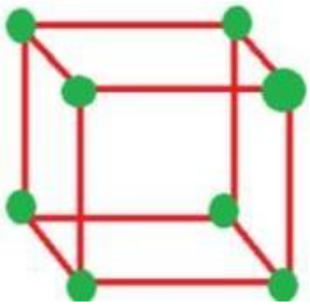
DOI: https://doi.org/10.54660/.IJMRGE.2026.7.1.283-288

Keywords: Mineral, Crystallization, Nucleation, Crystal growth Crystallization kinetics, Phase transitions

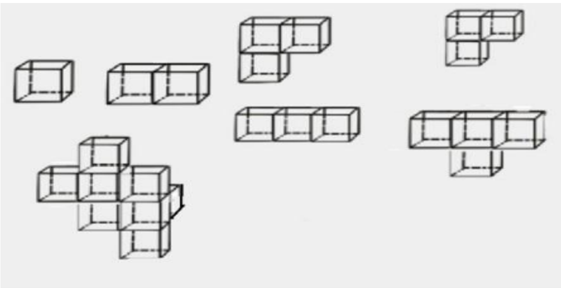
1. Introduction

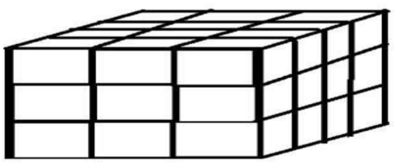
Current crystallization theories, such as crystalline geometric shapes addition or crystalline growth by chemical ionic bonding points or crystal lattices, are not able to close the circle and provide a complete explanation of every form of crystallization; in this article we explain a complete system applicable to any known form of crystallization. Analysis of existing crystallization theories and possibilities to understand which ones are the most suitable for understanding the process.

2. Addition crystallization:

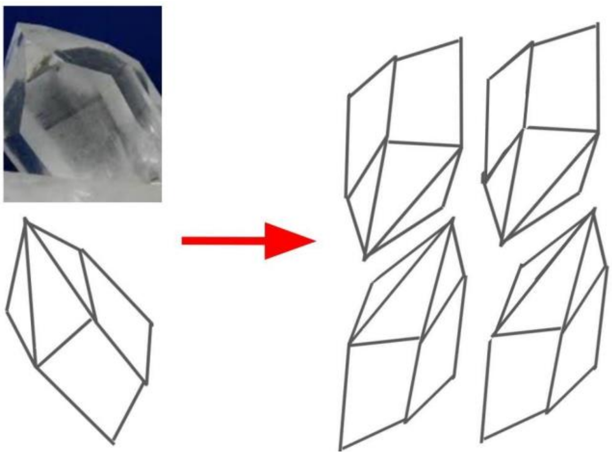


The simplest and easiest idea about crystallization is that atoms, when they join together in molecules, form a specific geometric shape, and through processes of addition or summation of that same geometric shape, we arrive at the final formation of an overall geometric shape that can be observed with the naked eye.



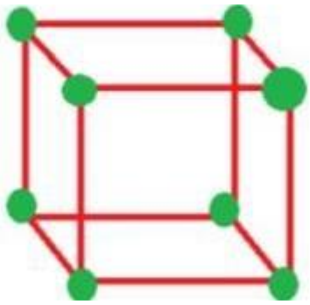


This would be the process of forming a cube by adding cubes.
Problems of the addition system: if we observe a quartz crystal with an irregular prism geometric shape.

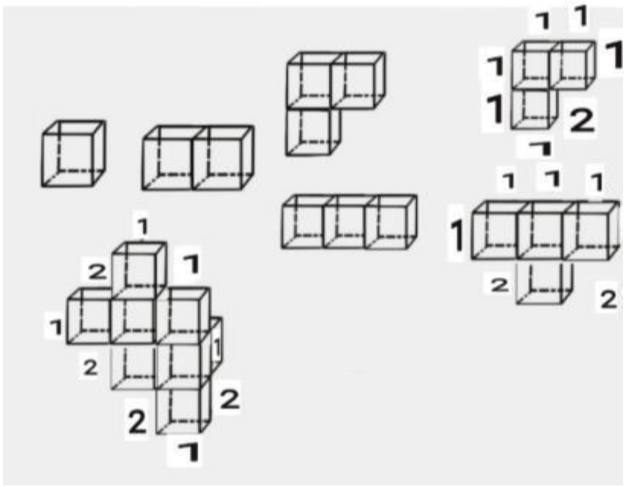


We can see at a glance that growth by addition is impossible because molecules with that geometric shape simply wouldn't fit together.

3. Crystallization by chemical bonding points:
In a cube, we consider that the atoms that form the molecule and the crystal are located at the vertices of the cube;

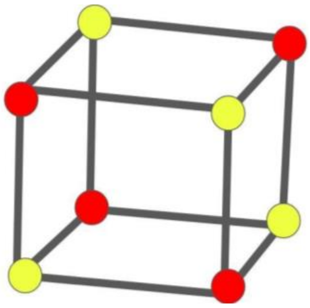


Each vertex would constitute a bonding point. Therefore, the more bonding points a crystal has, the greater the probability and tendency for it to grow along those areas.
In the case of cubes, each face of the cube has four bonding points.
Therefore, the greater the number of faces visible on the edge of the crystal, the greater the probability that the crystal will grow along those faces.

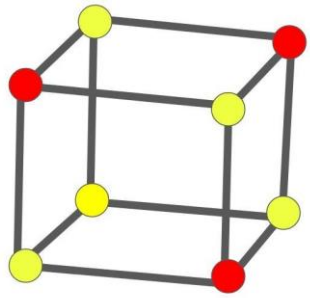


In the image, we see that in some places the crystal presents one face to the outside, and in others, two faces to the outside. It would be in the places where it presents two faces that the crystal should add new cubes and expand.
But this solution to the expansion of a crystal doesn't resolve an enigmatic question. How does a crystal know exactly how to grow, how far to go, and above all, where to stop, in order to form a cube or a perfect geometric figure with very well-defined edges?

4. Nucleation, Nucleus Formation
If we try to form a pyrite nucleus: FeS_2
We see that the molecule has one iron atom and two sulfur atoms.
To create a cube with a ratio of two sulfur atoms for every iron atom, we realize that it is practically impossible to do so by placing the sulfur atoms at the vertices and maintaining the two-to-one ratio.



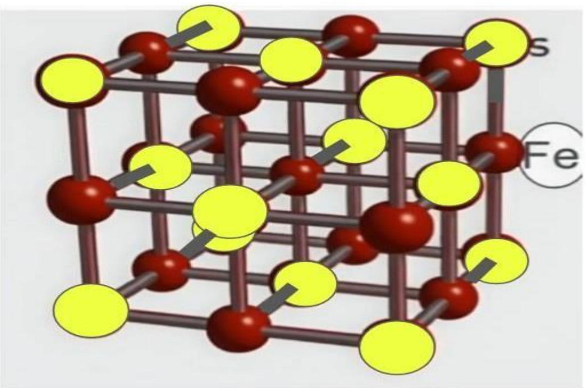
if we replace an iron atom at a vertex with a sulfur atom;



The problem is compounded because we have to combine that added sulfur atom with two other sulfur atoms; that is, this atom would combine with three sulfur atoms instead of just one, as shown in the pyrite molecule.

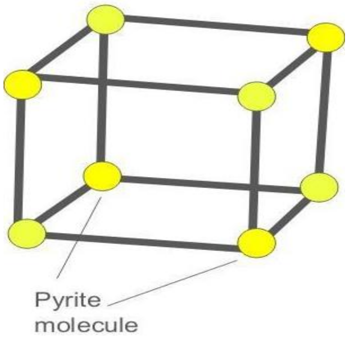
And if we add a series of cubes to form a larger nucleus, it becomes even more difficult to maintain the correct ratio.

We cannot maintain a consistent, repeating proportional pattern.

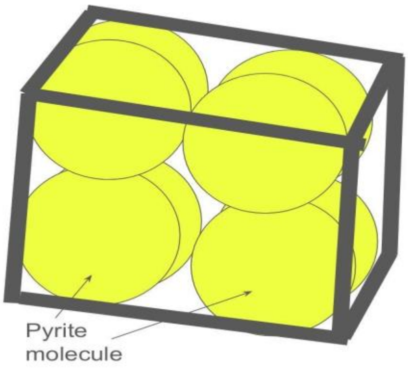


This leads us to rule out the possibility of forming a nucleus by placing the atoms that make up the molecule at the vertices of the geometric figure.

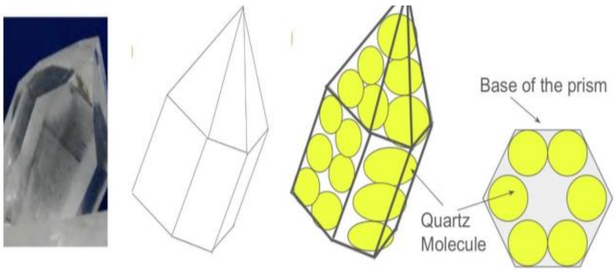
The only possibility is to place the entire molecules at the vertices.



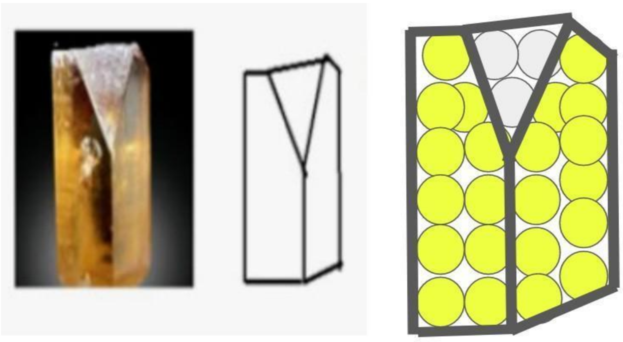
Now molecules are represented below inside the geometric figure and not at vertices; because this better reflects reality.



And in this way we can shape any geometric crystallization figure, such as a cube.



Like Quartz



Or any other crystal.

The initial geometric shape of the nucleus is produced by the angle at which several molecules combine and the ionic forces involved in the molecular bonds.

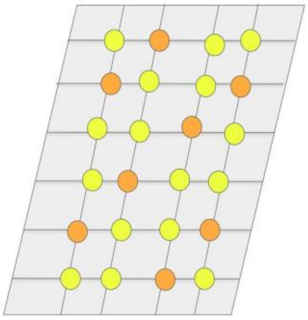
But where does the nucleus finish forming and crystal growth begin?

The answer lies in the impossibility of growth by addition; a prism or irregular pyramid can't add to another irregular prism or pyramid. Therefore, the only way for a crystal to grow is by adhesion of a crystal lattice to the nucleus, and thus the nucleus can only form with the first molecular bonds until the formation of the first geometric figure, since irregular geometric figures cannot be added.

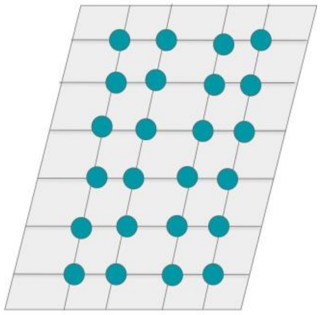
5. Crystal growth by crystal lattice covering.

Growth occurs by covering the nucleus with crystal lattices.

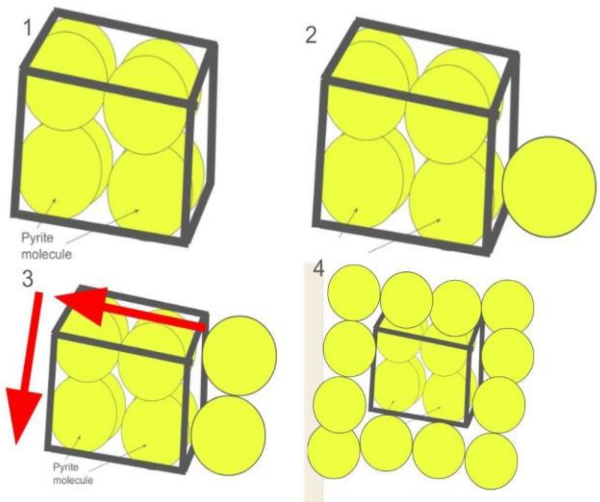
Now let's look at the structure of a crystal lattice.



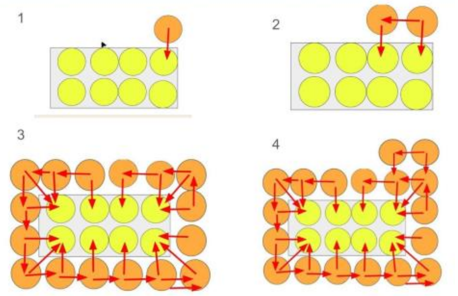
In the image, there is a pyrite (FeS_2) crystal lattice with sulfur atoms in yellow and iron atoms in orange. With formula's ratio proportion of two sulfur atoms for every one iron atom. Maintaining this ratio in the horizontal lines, the vertical lines show repeated sulfur-sulfur bonds, which is incorrect. In other words, it isn't possible to maintain a consistent, proportional, repeating pattern. The conclusion, therefore, is evident: crystal lattices cannot be formed by the combination or bonding of individual atoms; they must be formed by molecules. Only in this way can crystal lattices of any type of compound be formed.



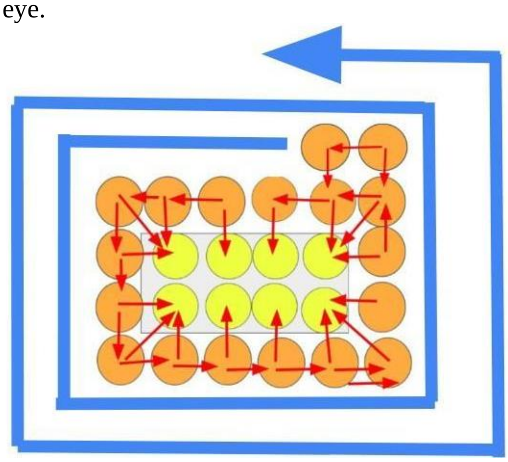
In the image, the blue spheres represent pyrite molecules, and by using these molecules as a basis, any type of crystal lattice can be formed from any substance.
Now let's study the evolution of the crystal lattice coating: We must consider a homogeneous and gradual coating such that, upon completion, the geometric structure of the crystal nucleus remains intact.



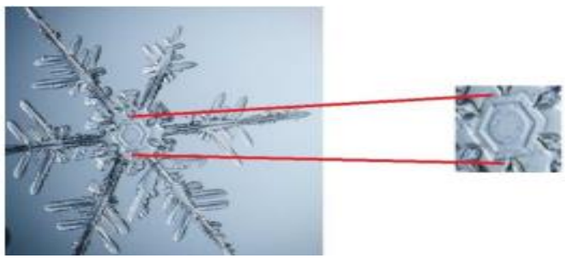
To understand molecular coating, we must consider that each molecule that joins the growing nucleus bonds bilaterally, on one side with the internal molecules of the crystal nucleus and collaterally with the molecules that are forming the coating.



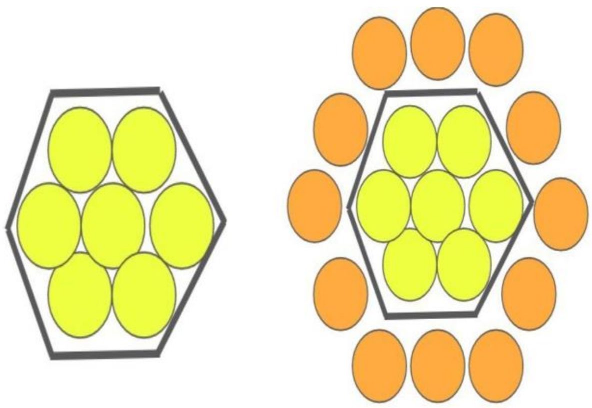
In this way, growth occurs in a spiral and superficial manner around the nucleus on all faces and progressively increases, enveloping the growing crystal. When growth stops at a certain point, the initial nucleus is enlarged and visible in a geometrically perfect crystal that can be observed with the naked eye.



6. Formation of a snowflake.

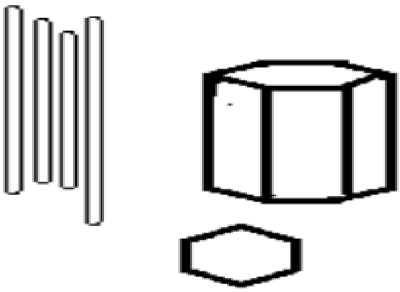


In the photo we can see a hexagon in the center of the flake and its formation can be understood according to the crystallization processes described above;



Once we observe the snowflake in its entirety;

On pic apparently can be seen a hexagon that will eventually occupy the entire perimeter of the snowflake, but which appears to be in the middle of its formation; crystalline branches are visible, forming the vertices of the final overall hexagon of the snowflake. To describe the process of snowflake formation, the different types of ice crystallization must be analyzed.



Ice not only forms hexagons, but can also form needles, prisms, or columns.

In this other image can be seen branches emerging from the edges of the central hexagon, on which needle-like shapes grow.

In this other pic, the hexagonal shapes grow from the branches extending from the edges of the central hexagon. From the branches extending from the center, hexagons of varying sizes grow. All of this lead to deduce that the shapes formed by the snowflakes are not the result of a single, global hexagon captured at a specific stage of its formation, but rather the formation of crystals of diverse shapes (columns, pyramids, needles, hexagons) of a dendritic and twinned nature; formed from the branches developed from the vertices of a primary, central hexagon.

7. References

1. Nguyen NGH, Lai DB, Ly NQT, Le NTQ, Van D. Effect of Croton tonkinensis Gagnep extract on calcium oxalate crystal formation causing kidney stones under *in vitro* conditions. Int J Multidiscip Res Growth Eval. 2024;5(3):165-170. doi:10.54660/IJMRGE.2024.5.3.165-170
2. Alhassan M, Suleiman M, Garba AA. Selectivity properties and concentration effects in the alkylation pathway of activated clay and CuO-MoO3/Al2O3 catalysts. Int J Multidiscip Res Growth Eval. 2021;2(1):186-189
3. Pruthviraj RD, Gangadhara N, Sanjay VR, Shivakumar HM, Sampreeth BS, Talakeri R. Hybrid composites of mild steel reinforced with SiC, Al2O3 and Fe2(SO4)3 for construction applications. Int J Multidiscip Res Growth Eval. 2021;2(4):349-354
4. Bindu PV, Manjappa S, Moinuddin Khan MH, Sachin HP, Suresh B. Cyclic dissimilarity in physico-chemical variables in groundwater quality of Honnali. Int J Multidiscip Res Growth Eval. [Year and details not fully provided in query; adjust as needed based on original article]
5. Obasi DC, Umoru GU, Udeozor PA, Obasi JN, Anaga CO, Ibiam UA, *et al*. Physicochemical, mineral and heavy metal compositions of four water sources within and outside Evangel University, Akaeze Take-Off Campus, Okpoto in Ebonyi State, Nigeria. Int J Multidiscip Res Growth Eval. 2023;4(5):941-946
6. Perez Sanchez A. Consideration of starlight waves redshift as produced by friction of these waves on its way through space. World Acad Sci Eng Technol. 2024;18(10):1030-4
7. Perez Sanchez A. Magnetic lines of force & diamagnetism. World Acad Sci Eng Technol. 2023;17(8):876-80
8. Perez Sanchez A. Consideration of magnetic lines of force as magnets produced by percussion waves. World Acad Sci Eng Technol. 2024;18(9):950-4
9. Perez Sanchez A. Earth's outer core metal liquid flow generates magnetic field without using geodynamo. Glob J Res Eng A Mech Mech Eng. 2025;25(1):110
10. Perez Sanchez A. Twisters and traveling Higgs bosons, unify general relativity and quantum mechanics, and explain dark matter. Glob J Res Eng A Mech Mech Eng. 2025;25(1):11-20
11. Perez Sanchez A. Discovery a periodic table new rule by studying the noble gases atomic numbers sequence. Int J Multidiscip Res Growth Eval. 2025;6(3):1030-1034. doi:10.54660/IJMRGE.2025.6.3.1030-1034
12. Perez Sanchez A. Electrical attraction law by electron flow unifies attraction and repulsion into a single attraction force and solves strong nuclear force mystery. Int J Multidiscip Res Growth Eval. 2025;6(4):630-633. doi:10.54660/IJMRGE.2025.6.4.630-633

13. Perez Sanchez A. Study on whether the curved shape of the rainbow originates from the curvature of water droplet or simply represents solar disc edge refraction. Int J Multidiscip Res Growth Eval. 2025;6(4):1231-1234. doi:10.54660/IJMRGE.2025.6.4.1231-1234

How to Cite This Article

Perez Sanchez A. Crystal nucleation by first molecules union, due to the impossibility of adding crystalline geometric figures to the geometric figure initially on nucleus and growth by crystalline network adhesion to nucleus. Int J Multidiscip Res Growth Eval. 2026;7(1):283–288. doi:10.54660/IJMRGE.2026.7.1.283-288.