Graphical indices of some chemical structure graphs

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Abstract. In present situations for theory and applications point of view graph theory is useful. Graphs are used as a representative tool for many problems of applied consequence. For illustration, a system of towns, which are considered by vertices, and connections among them make a biased graph. In present work graphical structure of graphene and ferroelectric hysteresis curve is explain.

Keyword: - Graphene; Graph Index; Hysteresis curve.

1. Introduction

Graph technique is a useful mathematical implement which are very useful in various subject of research point of views from chemistry to genetics and from materials science to various fields of engineering and similarly it is used in geography, sociology and architecture. Equivalently, it has also appeared as a useful mathematical discipline in its individual factual. The object represented by vertices, this relationship is showing in graph theory. A point where all lines are meet it is consider as vertex in other ways it is also called as node [1]. In order, associations between vertices are characterised by influences. In overall, one modest technique of expressive the construction of any scheme is graph.

For a countless change of difficulties such graphic pictures may main to a solution. Examples of such claims comprise signal-flow graphs, map colourings, databases, physical networks, and web graphs, organic molecules, tracing mazes as well as less tangible connections happening in social networks, ecosystems and in a flow of a computer program [2].

Swiss Mathematician, Leonhard Euler projected the explanation which directed to the accepted of a branch of mathematics called graph theory. Euler proved that there is no solution to the difficult based on the number of bonds joining each land part. Euler also observed that the amount of bonds at every land area would add up to twice the number of bridges. This seems as the hand-shaking lemma in graph theory, which states that the sum of the vertex degrees in a graph is equal to twice the number of edges [3]. This result infers to the preparation of an often used consequence in graph theory that states that the sum of vertex degrees in a graph is continuously even.

In present situations for theory and applications point of view graph theory is useful. Graphs are used as a representative tool for many problems of applied consequence. For illustration, a system of towns, which are considered by vertices, and connections among them make a biased graph. The well-known travelling salesman tricky asks for the direct conceivable tour, which appointments all the
towns accurately. Many computational problems in industry are solved by using graph. Each system is centered on some associations; therefore each system is a graph topology. For example: traffic organization, social relations, artificial intelligence, and so on, and there is a number of applications like this [4]. Graph theory has many applications; it is widely used in sociology, such as social sites like Facebook, where all data of users are calculated using graphs. Similarly, in YouTube, the algorithm of viewers depends on graph theory. Further, it is used to represent the network of computational devices. In subjects like Physics and Chemistry, graph theory is used to study molecules.

2. Methodology of Graph
The graph technique has been a variety of methodology applied for plotting the graphical structure of complicated nature of chemical drugs. These graphical methods are also useful to determine index parameters for ferroelectric and ferromagnetic hysteresis loop structure. The exact value structure of different parameters and relationships is calculated using graphical index and vertices methods. A few graphical indices methods are discussed below.

2.1. Graphical structure of Graphene
A Graphene is a building block of other graphite materials since its typical diameter of carbon atoms is 0.33 nanometers and in 1 mm of graphite, there are about 3 million layers of graphene. As the structure of graphene is discussed, as it shows a honeycomb-like structure in which carbon atoms are structurally attached to each other at a distance of a nanometer; therefore, the graphene is the strongest material.

The general Graphene is the strongest material; it is harder than diamond, elastic than rubber, and lighter than aluminum. Nanographene is the unit of graphene, and its fabrication process is more complicated than general graphene. Nowadays, various applications are applied in the field of engineering. The graphical structure of graphene is shown in Figure 1 in this figure shows that the structure of graphene is arranged such that this hexagonal arrangement consists of m rows and n columns consisting of mn-hexagons, which is represented by G(m,n) [5].

![Figure 1. Hexagonal Graphene sheets.](image-url)
2.2. Graphical representation of PE-Hysteresis loop

Hysteresis loop is the important feature of materials which shows the ferroelectric nature. In another word it says that ferroelectricity of materials is determine by using ferroelectric hysteresis loop. This ferroelectric PE curve is determined by using hysteresis graph [6, 7]. figure 2 shows PE-Hysteresis curve graphs; this shows that different parameter like Ec, the Coercive field, Pr remanent polarization, and Ps saturation polarisation. This parameter is easily determined by plotting the hysteresis curve graphs. The variations of hysteresis loop are with respect to the domain walls [8, 9, 10]. The positions of domain walls is change then this parameter is changesThese parameters are most likely to be of interest to the material manufacturer and will give them some indication of the poling conditions to use for the ceramic, and a better understanding of the material behaviour [11,12,13].

![Hysteresis curve graph](image)

**Figure 2.** P-E hysteresis loop parameters for a ferroelectric material.

3. Conclusion

In current article, graphical index of graphene sheets is completely derived and correctly explain its hexagonal structure. Also, give a simple expression of graphical representation of Hysteresis curve which is important phenomenon of ferroelectricity.

4. References

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