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Communication

New Properties of Phosphorus to Zinc Elements - Exploration of Energy Conversion Characteristics Based on Electromagnetic Signal Transmission in Semiconductor Devices

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Abstract

This study aims to explore novel properties of phosphorus (P) to zinc (Zn) elements. On the basis of previous work, we have explored the properties of elements ranging from H to Si. And the chemical elements belong layered, with P to Zn defined as the fourth layer to be researched using a contemporary industrial perspective. Since the late 19th century, there has been a progression in the application of electricity and magnetism to motor technology, leading to the evolution of computer systems capable of receiving, processing, and displaying external signals. These functionalities are recognized as attributes of the P element, serving as sensor modules for energy conversion. Subsequently, the establishment of a global production system through the utilization of the Internet and the Internet of Things has facilitated the growth of the biomedical industry within a vast industrial framework. This framework is characterized as the essence of the S element, functioning as an amplifier module for energy conversion. These 16 elements perform higher-level functions and can be seen as various processes for energy conversion in electromagnetic equipment, exemplified by biological signal transduction. They correspond to semiconductor chip fields such as from sensors and amplification circuits to displays and printing. This exploration is poised to enhance comprehension of the distinctive properties inherent in these elements.

Keywords

Phosphorus to Zinc Energy Conversion, Human History, Signal Transduction, Semiconductor Chip

1. Introduction

According to Table 1, upon the completion of the initial three cycles encompassing the comprehensive process spanning energy harvesting, communication to industry team building involving elements from H to Si [1, 2], or upon the establishment of processing techniques for clothing, food, shelter, transportation, and the formation of industrial

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frameworks [3], the progression to the fourth cycle is bound to ascend to a more advanced stage. This evolution entails attaining swifter and more extensive industrial iterations and enhancements. Alternatively, starting from a small signal in the environment and amplifying this signal through these elements (from phosphorus to zinc), there is a mobilization of ambient energy, organizational pathways, and technological resources. This process leads to industrial enhancements and the introduction of superior products to address environmental shifts. Furthermore, it correlates with the advancement of one's internal state and the refinement of the spiritual domain, denoted as energy conversion.

The study of the chemical and physical properties of elements from phosphorus to zinc will be described based on the industrialization process of society, and evaluated using electromagnetic conversion phenomena in semiconductor devices and signal transduction in biological systems [4-14].

For example, P, the 15th element corresponding to the era from about 1877 to 2000 AD, witnessed significant advancements. During this timeframe, the implementation of logistical transportation systems such as trains and automobiles facilitated industrial progress driven by electricity and magnetism. This led to the creation of alternating current generators and motors, which eventually evolved into Neumann architecture-based computers capable of receiving external signals, processing them using CPUs, and executing outputs. P is regarded as a sensor mediated by electromagnetic signals, which inherently represent a fourth-dimensional signal imperceptible by sight or touch. Therefore, commencing from P signifies the initiation of the fourth cycle.

Table 1. *The task of each Chinese history.*

Num	Element	Historical Task	Num	Element	Historical Task
1	H	from settlement to food planting	8	O	home construction to furniture design
2	He	control flood and open up wasteland	9	F	wharf construction to the national canal
3	Li	market town handicraft to credit lease	10	Ne	academic exchange to provincial cultural areas
4	Be	summarize leaning and form disciplines	11	Na	herbal medicine to banknote trading
5	B	municipal construction to national transportation	12	Mg	eurasian science and technology exchange and interaction
6	C	national road business to Tofu workshop	13	Al	cannon design to siege
7	N	advance handicraft industries such as iron smelting to paper making	14	Si	logistical lift, steam engine to car

2. Functional Analysis of Elements

The fourth largest period within the periodic table of new elements, encompassing phosphorus (P) to zinc (Zn), consists of a total of 16 elements that collaboratively engage in the energy conversion system process. For example, the detection of a subtle external signal is translated through the circuit system into a photoelectric signal for display. This process can refer to the technical roadmap of semiconductor software and hardware equipment development, such as the applicant's participation in the overall design of an electrocardiogram machine. Initially, electrocardiographic electrodes are employed to gather electrical signals from the human skin, followed by signal amplification, noise and motion interference filtration and elimination, and subsequent sampling and conversion into digital signals. The analyzed signals are processed using software to extract feature values and store them. These operations align with the characteristics of atoms, depicted in Figure 1. The introduction is as follows:

Phosphorus (P, atomic number 15) serves as a sensor, detecting external signals and transforming them into discernible signals. Additionally, P participates in signal transmission and amplification. The transition from C element to Si element forms a complete process of industrial entrepreneurship. Therefore, P has already gone through the entire entrepreneurial process, with its outermost electrons extending outward, creating numerous spatial vacancies to assimilate external resources. After absorbing external signals, P can integrate the 14 situations listed in Table 1 to complete more complex manufacturing processes. Consequently, P embodies the sensor function. In living organisms, P forms the backbone of skin and DNA, and ATP stores a large amount of chemical energy in high-energy phosphate bonds. P plays an important role in processes such as sensation, skeleton, and energy transference in the human body. Notably, the skin serves as a receptor for external signals, providing partial substantiation for the sensory role of P element.

The element sulfur (S, atomic number 16) serves as an

amplifying agent, possessing sensor characteristics akin to P for receiving external signals. Through the reception and processing of numerous signals, it demonstrates the ability to explore innovative manufacturing concepts and create a multitude of contact surfaces with the environment, thereby aiding in enhanced energy conversion processes. S has very complex phase transition characteristics, which are conducive to external catalysis and protein synthesis, notably contributing to the formation of protein tertiary structures.

In the industry, the socioty related to S would present numerous entrepreneurial product concepts that draw investments and foster the establishment of an industry network. It has the potential to bring together graduate students, universities, enterprises, hospitals, and other entities to facilitate academic-industry collaborations. This collaborative effort can lead to the transformation of academia-industry connections, subsequently fostering the development of complementary industries and benefiting a broader populace. The incorporation of S into rubber enhances its adaptability to diverse external environments.

The element chlorine (Cl) acts as a filter in capacitor, inductor and operational amplifier circuits, effectively eliminating undesired or interfering frequency bands. In societal contexts, its role can be likened to that of surgery, selectively removing the majority of malignant tumor tissue (which compressing the space of the tumor from another dimension instead of directly removing it) to promote overall societal orderliness and enhance human health. See in Figure 1 and Figure 2.

Argon (Ar) element is analogized to the initial stage of analog-to-digital signal conversion, involving the processes of sampling and holding. When combined with Cl, which generates a stable and organized signal, argon facilitates signal collection at specific sampling frequencies, temporary storage within each cycle, and subsequent transmission. In modern power electronic devices, sensors operate without the need for a dedicated power source, while amplification circuits necessitate an external power supply. Both the operational amplifier circuit and oscillation circuit depicted require a power supply for operation. Operational amplifiers are essential for filtering and sample holding functions, while crystal oscillator signal generators are utilized for sampling and holding processes. Figure 1 illustrates a schematic diagram of the filtering and sampling circuit. Ar has the capability to interrupt analog signals and may have the property of disrupting the normal activity of surrounding materials.

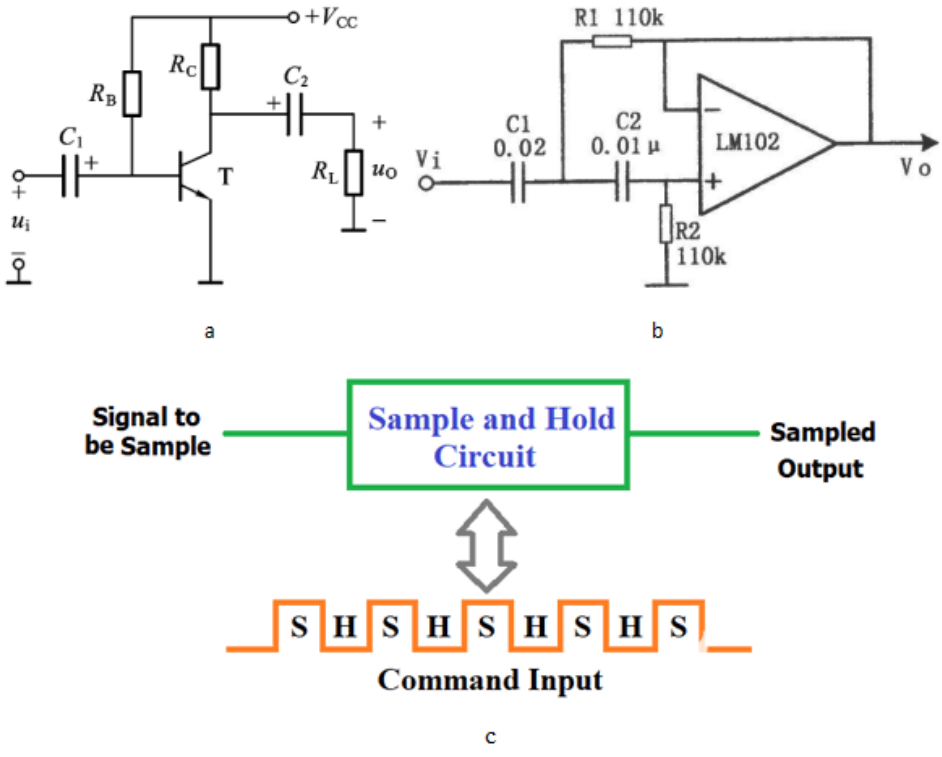

Figure 1. *a. Basic amplifier circuit (Ui represents P), represents S. b. Capacitive filtering circuit, represents Cl. c. Sample and hold circuit, represents Ar.*

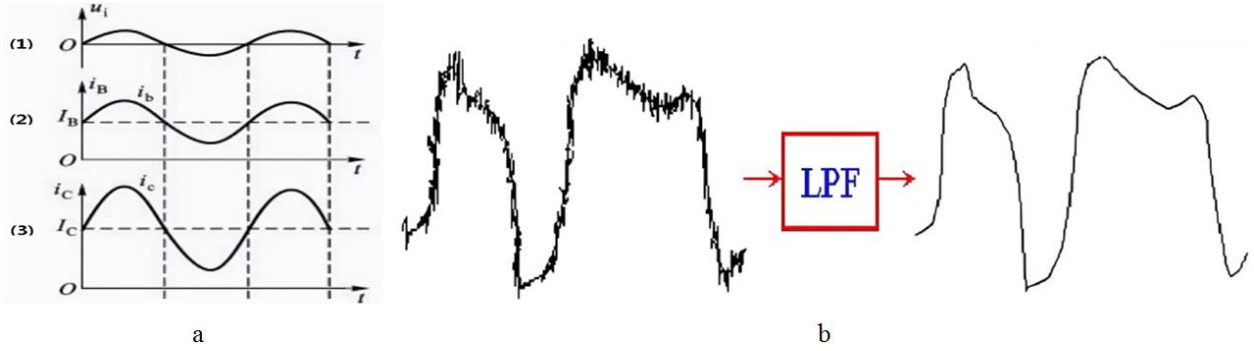

Figure 2. *a. A transistor amplifies current – S. b Low-pass filter – Cl.*

The element potassium (K) is involved in the conversion of analog data into digital data named A/D conversion. This process necessitates the utilization of triggers to facilitate the quantification of analog signals to a digital format for subsequent storage and utilization. Internal memory is required to store these digitized data effectively.

Potassium ions play a predominant role in human cells. Potassium can catalyze the activity of numerous enzymes, enhancing the transcription of DNA into proteins. Analogously, if DNA is considered an analog signal, the resultant synthesized protein can be viewed as a discrete signal, representing a form of analog-to-digital conversion. Within living organisms, potassium activation stimulates a multitude of enzymes, facilitating protein synthesis, as well as sugar and lipid metabolism. Correspondingly, the function of iron (Fe) element involves digital-to-analog conversion, transforming discrete signals into a continuous signal. Conversely, the continuous shaping of metallic iron represents a discrete signal input without fragmenting the Fe, thereby enhancing its ductility. Employing water for cooling high-temperature metallic Fe enhances the corrosion resistance of Fe products. The properties of water encompass functions related to ornamentation and maintenance, and the process of quenching iron with cold water may impart self-ornamentation and maintenance characteristics to the Fe.

Calcium (Ca) element is involved in extracting characteristic values through principal component analysis to derive essential components from discrete data, such as a block of eigenvalues, obtained from the A/D converted data as discussed earlier. Eigenvalues can be utilized to reconstruct the original signal or generate a functional representation.

For example, the skeletal framework of the human body provides structural support, with muscles attaching to bones, and other organs connecting to the muscles. Both the bones forming the body's structure and the muscles responsible for movement rely on Ca.

Table 2 shows the system process of energy conversion involving non-touchable substances and the corresponding functions of elements. Due to limited space, the last eight elements from V to Zn will not deeply analyzed.

Table 2. *Energy Conversion Process and Division of Elements.*

num	elements	energy conversion process with	needed components
15	P	sensor	wire, capacitor and inductor
16	S	amplifier circuit	power supply, transistor
17	Cl	filtering, noise elimination	integrated operational amplifier
18	Ar	sampling holding	crystal oscillator
19	K	A/D Conversion	trigger for digital circuits
20	Ca	principal component extraction	microprocessor/arithmetic unit
21	Sc	data compression	internal memory, etc
22	Ti	data storage	external memory
23	V	extraction data	--
24	Cr	interpolation for recovery	--
25	Mn	pattern high-dimensional	--

num	elements	energy conversion process with	needed components
26	Fe	D/A conversion	--
27	Co	recombination, overall splicing	--
28	Ni	introduces other energy, internal and external cooperation	--
29	Cu	screen display	--
30	Zn	print or record	--

3. Cell Signal Transduction

In biology, sensory organs receive specific signals that stimulate cellular responses [5, 8, 15, 16]. These signals traverse the cell membrane, reach the cell nucleus, where they are translated into proteins. The synthesized proteins are then transported to relevant areas of the human body to address the initial stimulation. Cellular signal transduction represents a form of energy conversion. For example, when the skin perceives external stimuli corresponding to the P element, the electrical signal is amplified to correspond to the S element. The translation of DNA into RNA for sampling and holding corresponds to the Ar element.

Proteins are transported from the endoplasmic reticulum to the Golgi apparatus and subsequently to their functional sites, showcasing a complex cellular process. Eukaryotic animal cells exhibit over 20 post-translational modifications of proteins, including ubiquitination, phosphorylation, glycosylation, lipidation, methylation, and acetylation. The covalent modification of individual amino acid residues on a protein following the translation of mRNA into a protein is of paramount significance. This modification process enhances the complexity of protein structure, completeness of function, precision of regulation, and specificity of action, thereby providing a comprehensive technical perspective.

The achievements of contemporary semiconductor devices and biomedical exploration serve as valuable references for the research concepts explored of this project.

4. Discussion

This manuscript proposes a novel reorganization of the periodic table of elements, where each period consists of 1, 4, 9, 16 elements, following a pattern akin to the division of ancient Chinese dynasties. Just as each dynasty transitions into the next after reaching its peak, history undergoes iterative advancements. Similarly, elements evolve iteratively in a comparable manner.

In addition, the properties of these elements are based on modern scientific research [11-14]. The elements from P to Zn indeed exhibit characteristics similar to those in Table 2 in terms of new atomic physical properties. P represents sensors, such as today's computers and automation devices that sense external commands through electricity and directly execute them. On the other hand, S embodies the societal role anticipated in the forthcoming century, where a select group pioneers novel product concepts, subsequently adopted and expanded by the global industry, akin to an amplification circuit. Chlorine, as an element denoting filtration, signifies an era where individuals with enhanced abilities will push the boundaries of technologies, such as anti-gravity, thus obtaining effective industrial logic. Through an examination of the biological functions of phosphorus, sulfur, and chlorine in living organisms [15, 16], alongside the exploration of novel characteristics exhibited by other elements, it is also possible to match the new functions of elements similar to Table 2.

5. Conclusion

Within the fourth cycle, encompassing 16 elements from P to Zn, a pattern of iterative evolution is observed. Each element within this cycle completes a task, paving the way for subsequent elements to develop new functionalities. Situated within the fourth dimension, these elements engage in invisible and non-contact spiritual communication facilitated by electricity and magnetism. The augmentation of the spiritual realm within this dimension is summarized as the fundamental principle of energy conversion.

Abbreviations

P Phosphorus
S Ssulfur
Cl Chloride
Zn Zinc

Conflicts of Interest

The authors declare no conflicts of interest. The authors thank support of Hubei University of Science and Technology and thank the world's scientific and technological workers for their exploration of relevant knowledge.

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