Retraction

Retracted: Application of Nanomaterials in the Field of New Energy Environment and Economic Benefit Analysis

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

1. Discrepancies in scope
2. Discrepancies in the description of the research reported
3. Discrepancies between the availability of data and the research described
4. Inappropriate citations
5. Incoherent, meaningless and/or irrelevant content included in the article
6. Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article’s content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

References

[1] S. Xu, H. An, and J. Dai, “Application of Nanomaterials in the Field of New Energy Environment and Economic Benefit Analysis,” Advances in Materials Science and Engineering, vol. 2022, Article ID 4129808, 10 pages, 2022.
Research Article

Application of Nanomaterials in the Field of New Energy Environment and Economic Benefit Analysis

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The depletion of traditional fossil energy and the air pollution caused by the burning of fossil fuels have forced science authors from all over the world to gradually turn their attention to the development and utilization of renewable energy. However, limited by the defects of less exposed active surface and slow diffusion of traditional materials, nanomaterials have advantages that traditional materials cannot match and can significantly improve the performance of energy conversion and storage devices. Based on this, this paper studies the application and economic benefits of nanomaterials in the field of new energy and environment and provides a new idea for the development direction of nanomaterials in the field of new energy and environment. This article selects three different survey objects to correctly measure the energy consumed by the three groups of experimental vehicles traveling 1 km, 5 km, 10 km, and 20 km and the content of substances that pollute the environment. At the same time, the three traditional electrodes are connected. The electrochemical workstation of the system measures the electrochemical performance of nanomaterials to analyze the application of nanomaterials in the field of new energy and environment and the economic benefits brought by them. The experiment proves that AgPdMo/MoS 2 NWs has the smallest charge transfer resistance of 259.3 Ω, the smallest impedance, and the fastest electron transfer rate. The charge transfer resistances of MoS 2 NSs, AgPd NWs, and AgPdMo NWs are 37079 Ω, 398.4 Ω, and 916.6 Ω.

1. Introduction

Since people entered the industrial revolution, the continuous development of society has accelerated energy demand and brought irreversible environmental pollution. Modern technologies that rely on fossil energy have saved humans a lot of trouble, but whether it is energy demand or technological innovation, the development at this stage still relies on fossil fuels, but fossil energy, as a nonrenewable energy source, is now on the road to be used up. With the extensive use of fossil energy, environmental pollution has become the focus of everyone’s attention. Therefore, the innovation of renewable energy has been the current research focus of many scholars. As we all know, electrolyzed water is one of the important sources of clean energy, and high-efficiency catalysts that catalyze electrolyzed water still rely on rare precious metals. The lack of precious metals and extremely low stability have severely reduced the rate of commercial development of catalysts. But the main direction is absolutely dominated by new energy. With the rapid development of China’s economy and the popularization of automobiles, environmental pollution has become increasingly prominent. The exhaust gas emitted by traditional automobiles and the environmental pollution caused by traditional lead-acid batteries have directly aggravated people’s desire for new energy lithium batteries. In short, the development of the new energy industry will become dominant in the future. Of course, some people may feel that new energy is not safe and durable and will not accept new energy, but the future development prospects are still considerable. Therefore, the development of low-cost, high-efficiency oxygen evolution, hydrogen evolution, and oxygen reduction catalysts is of great significance for the storage and development of clean energy.
In order to reduce the impact of resources and the environment on economic development, many foreign countries started the practical development and theoretical exploration of new energy sources as early as the middle of the last century. The first international oil crisis prompted many developed countries and oil-deficient countries to pay attention to research and development of new energy. The United States, Brazil, and other countries have developed large-scale ethanol substitution technology; to solve the problem of surplus of agricultural products and increase farmers income, they have begun to develop biomass energy using grain as raw materials; with the rapid development of automobile production, the import of alcohol products has focused on solving oxygen-containing lubricants, improving engine performance, and reducing environmental pollution; developed and developing countries have begun to generally pay attention to the development of new energy sources, and new energy sources have become the most dynamic sunrise industry in the world. Yan et al. believe that a certain amount of renewable fuel should be added to the total composition of gasoline, and the percentage of addition should be increased every year [1]. Yimam et al. proposed that in order to speed up wind energy production and market promotion, a long-term protection electricity price system and a standardized grid-connected system should be implemented [2]. Fahd et al. proposed that the electricity market plays an important role in realizing the optimal allocation of resources and promoting the consumption of new energy [3].

Since the 1950s, the Chinese government has attached great importance to the development of new energy sources. In the 21st century, policy support has continued to increase and the content has become more specific. The term “mandatory acquisition” requires power monopolies and other public utility companies to purchase more efficient and environmentally friendly new energy. The National Science and Technology Commission has continuously regarded the research and development of biomass energy technology as a key research project among the three national five-year projects. The scientific research results have been quickly promoted in the market. Basker and Kolandaswamy proposed that policies should strengthen planning guidance and focus on optimizing new energy development models and layouts, strengthen support for the renewable energy industry, and promote the sustainable and rapid development of renewable energy [4]. Dinning proposed that the electricity market has a huge role in realizing the optimal allocation of resources and improving the efficiency of new energy use. Before optimization, blindly pursuing economic development will consume a lot of energy, but the utilization rate is very low, forcing the country to optimize the policy and reduce pollution, energy conservation, and emission [3]. Engelfriet proposed that the development of electric energy alternative technology and optimized dispatching operation control technology can effectively promote the development of new energy and the improvement of the level of consumption and utilization. Because of the rapid progress of new energy construction in China in recent years, it was difficult to cope with the intermittence and volatility of new energy power generation by relying solely on traditional thermal power peak regulation, resulting in a severe consumption situation. In recent years, electric energy substitution has been paid more and more attention, which has become an important driving force for the revolution on the energy consumption side and is of great significance for solving the problem of new energy consumption. With policy support, technological progress, and mechanism improvement, the current conditions for electric energy substitution to promote clean energy consumption are becoming more and more sufficient [5–7]. The conflict between energy resources and the ecological environment is a problem that has always plagued our country’s development. According to the theory of market economy, all the natural resources and labor that can be utilized are resources in economics, and resources are in short supply and insufficient. Experiments have proved that new energy is the foundation of sustainable development. It solves the problems of traditional mineral energy shortage, deterioration of the ecological environment, and alleviation of the greenhouse effect and has become the focus of the world’s attention. This new energy research topic is proposed [8–10]. It is of extremely important strategic significance for China to achieve sustainable economic development, adjust energy structure, and build a conservation-oriented society.

2. Application of Nanomaterials in the Field of New Energy Environment and Economic Benefit Analysis

2.1. New Energy Resource. New energy power generation usually refers to the small power generation system installed on the user side. There are different types of new energy power generation [8, 11]. According to whether the energy used is renewable energy, it can be divided into power generation using renewable energy, such as solar photovoltaic power generation, wind power generation, ocean power generation, and power generation using nonrenewable energy sources, such as microcombustion engines. These two types of new energy have different characteristics [12].

2.1.1. Wind Power. As a distributed energy source, wind turbines have obvious advantages, mainly in the following aspects: Wind energy is a clean, pollution-free renewable energy source. Compared with traditional thermal power generation, the biggest advantage of wind power generation is its environmental friendliness [13, 14]. Wind energy is widely distributed, easy to develop, and free of transportation and storage. It only takes a year or less for wind farms to go from construction to commissioning, which is a construction speed that other forms of power sources cannot achieve. Although the cost of wind power generation is higher than that of traditional power generation in the early stage of development, due to the continuous improvement of its economy and the maturity of related technologies, its power generation cost is gradually decreasing, and it is close to traditional thermal power. Wind turbines are simple in equipment, flexible in installation, and flexible in investment scale.
2.1.2. Photovoltaic Power Generation. Photovoltaic power generation uses crystal panels to convert solar energy into electrical energy. Since all energy comes from the sun, photovoltaic power generation is a form of renewable energy utilization. It is widely used in small- and medium-sized users of the distribution network to achieve self-sufficiency in electricity during the day. At the same time, the surplus electricity can be sold to the grid, and electricity can be purchased from the grid at night to realize the interaction and response between users and the grid.

Like wind power generation, photovoltaic power generation is also a technology that uses renewable and clean energy to generate electricity. It has the following advantages: The currently proven solar energy can use about 100 billion watts of energy, which is beyond imagination. It is convenient to install and transport, and the construction period is short [15, 16]. A large number of new technologies and intelligent equipment have been invested in the construction and operation of photovoltaic power stations, making their operating costs lower.

2.1.3. The Fuel Cell. Fuel cell power generation is based on the principle of chemical reaction. After mixing fuel with air or oxygen, the catalyst reacts to convert the chemical energy in the fuel into electrical energy. For the fuel, hydrogen, natural gas can be used. In theory, as long as the fuel is continuously fed into the fuel cell and the reaction products are cleaned up in time, the entire power generation process can continue.

Fuel cell power generation has the following characteristics: compared with other new energy sources, fuel cells have the advantage of high power generation efficiency, usually reaching 40% to 65%. When combined with heat and power, they can achieve higher power generation efficiency, and their fuel efficiency even exceeds the most advanced natural gas-fired steam turbine [17]. The chemical reaction of the fuel cell is carried out in the electrolyte, and there are no operating parts, so there is no noise pollution. At the same time, the product of the chemical reaction is generally only water, which has almost no pollution, so it is also a clean energy.

2.1.4. Micro Gas Turbine. Micro gas turbines are also called micro gas turbines, with relatively small capacity, usually tens to hundreds of kilowatts. The power generation efficiency of micro gas turbines is relatively high, usually up to 30% when operating at full load. If operating in the cogeneration mode, the efficiency is as high as 75%. Micro gas turbines generally use nonrenewable energy such as natural gas and gasoline as fuel. The equipment is relatively small in size and has high operation and maintenance efficiency. Therefore, it can significantly improve the flexibility of grid operation and has a significant effect on improving the peak-valley difference in power consumption [18–19]. Therefore, micro gas turbines are usually used in distributed power generation systems to generate electricity during peak grid load periods to relieve system pressure and have become one of the most mature distributed power sources [21–23].

2.2. Application of Nanomaterials in the Field of Energy and Environment

2.2.1. Application of Nanomaterials in the Field of Energy and Environment. With the development of urban modern industry, the impact of motor vehicle exhaust on the urban environment is getting worse and worse. For example, the resource recovery rate is low, and the recycling of renewable resources that are not easy to be recycled is serious. The waste material recycling enterprises generally have small operating scale and backward technology, and the investment in the development of renewable resource recycling technology is seriously insufficient. Although China has abundant energy reserves, many industries have a high input-output ratio. Under the interference of many unfavorable factors, our country is facing an unprecedented crisis of energy use. Under the advocacy of the government, environmentally friendly catalytic products for purifying motor vehicle exhaust have been put into use in major cities, and the demand is increasing day by day [24, 25]. Adding nanomaterials to automobile exhaust purifiers can effectively reduce the number of precious metals, and the purification efficiency is also very high. Nanomaterials can clearly distinguish oxides and solid oxides by using their unique electronic layer structure, so that automobile exhaust can stop polluting volatilization under high-temperature conditions [26, 27]. At present, the application ability of nanomaterials in automobile exhaust purification still needs further development.

2.2.2. Application of Nanomaterials in Industrial Waste Gas Purification. The expansion of industrial production scale has greatly increased industrial waste gas emissions. Practice has proved that nanomaterials have good purification functions. Starting from the aspects of controlling and changing the molecular structure of gases, the catalytic properties of rare earths are used to desulfurize and denitriify flue gas and fully demonstrate the absorption capacity of nanomaterials [28]. At the same time, due to the serious air pollution in the cities of our country and the variety of pollutants, the concentration is high, and the use of nanomaterials can greatly reduce the emission rate of harmful substances in the air under the light source and can also expand the air through the modification effect and adsorption capacity. Adsorption means that the surface atoms of nanomaterials, especially the atoms on the edges and corners, have high chemical activity. These atoms are the active center of the catalyst and the active site of the adsorbent [29, 30]. The spectral absorption characteristics make the design function of the catalyst more capable of development.

2.2.3. Application of Nanomaterials in Catalytic Combustion. Fossil fuels will form a variety of toxic gases during the combustion process. At the same time, if the combustion conditions are not good, these expensive fossil fuels will not burn efficiently. Rare earth catalytic materials can help fossil fuels to fully burn. That is, in order to improve the safety of
In the above formula, $\partial f/\partial Z$ represents the carbon emission coefficient when nonrenewable energy is used and $\partial f/\partial e$ represents the carbon emission coefficient generated by people’s daily life, and both are greater than 0. Emissions promote the increase of carbon dioxide content in nature. $\partial f/\partial x$ represents the absorption of carbon dioxide in nature, which is generally a negative number.

The economic benefit $y(t)$ brought by renewable energy is determined by the amount of renewable energy invested in $\int_{h}^{t} I(s)ds$, while the economic benefit $x(t)$ brought by nonrenewable energy is determined by the amount of nonrenewable energy invested in $t$ at the current moment as follows:

$$y(t) = f_1 \left( \int_{h}^{t} I(s)ds \right), \quad (3)$$

$$x(t) = f_2 (I_2(t)), \quad (4)$$

where $I_1$ is the investment in renewable energy, $I_2$ is the investment in nonrenewable energy at the current moment, $f_1$ is the economic benefit function brought by nanomaterials in the field of renewable energy, and $f_2$ is the current moment in the field of nonrenewable energy. Assuming that the ratio of renewable energy to nonrenewable energy input is $\psi$ and $\phi$, respectively, we have

$$I_1(t) = I(t)\psi(x(t)), I_2(t) = I(t)\phi(x(t)). \quad (5)$$

Combination formula (2) has

$$I_1(t) = \left[ g(\frac{\partial f}{\partial Z} y(t), \frac{\partial f}{\partial e} e, \frac{\partial f}{\partial x} \psi x(t)) \right], \quad (6)$$

$$I_2(t) = \left[ g(\frac{\partial f}{\partial Z} y(t), \frac{\partial f}{\partial e} e, \frac{\partial f}{\partial x} \phi x(t)) \right]. \quad (7)$$

Substituting formula (6) into formulas (3) and (4), we have

$$y(t) = f_1 \left[ g(\frac{\partial f}{\partial Z} y(t), \frac{\partial f}{\partial e} e, \frac{\partial f}{\partial x} \psi x(t)) \right] ds, \quad (8)$$

$$x(t) = f_2 \left[ g(\frac{\partial f}{\partial Z} y(t), \frac{\partial f}{\partial e} e, \frac{\partial f}{\partial x} \phi x(x)) \right]. \quad (9)$$

Combining the above equations, we get the following equation:

$$\begin{align*}
\dot{x}(t) & = g\left( \frac{\partial f}{\partial Z} \frac{\partial f}{\partial e} \frac{\partial f}{\partial x} \right), \\
y(t) & = f_1 \left[ g\left( \frac{\partial f}{\partial Z} y(t), \frac{\partial f}{\partial e} e, \frac{\partial f}{\partial x} \psi x(t) \right) \right] ds, \\
x(t) & = f_2 \left[ g\left( \frac{\partial f}{\partial Z} y(t), \frac{\partial f}{\partial e} e, \frac{\partial f}{\partial x} \phi x(x) \right) \right].
\end{align*}$$

2.2.4. Application of Nanomaterials in Making Fuel Cells. Hydrogen economy is the hottest new energy economy in the 21st century. At present, the most mainstream energy development project in the world is hydrogen production from organic liquid fuels, such as hydrogen production from methanol, hydrogen production from gasoline, and hydrogen production from renewable resources, all of which are required in hydrogen production devices. Use rare earth catalytic performance to complete. Due to the complex energy structure in China, there are very few chemical materials that can facilitate methanol volatilization in the on-board hydrogen production industrial structure chain, and once hydrogen production is successful, there will be a huge amount of toxic and harmful substances produced in the process. Using the catalysis of rare earths, other renewable resources such as methanol and gasoline can use rare earth minerals as carriers to carry out complex oxidation reactions. At the same time, the molecular structure of the rare earth catalyst in the reaction will be relatively stable and will not volatilize too many pollutants and polluting gases.

2.3. Establishment of the Economic Benefit Model of Nanomaterials in the Field of New Energy and Environment. If the degree of economic development is only linked to energy factors, in today’s energy economic system, the degree of economic development function $f(x, y)$ is restricted by two key factors: renewable energy $x$ and nonrenewable energy $y$. The degree of economic development $f(x, y)$ which changes with energy consumption is mainly used to analyze the economic benefits of new energy; namely,

$$f(x, y) = (e + 1)(x + y)^{-1}. \quad (1)$$

With the continuous development of the economy and the gradual consumption of energy, the use of nonrenewable energy and people’s daily life will produce a large amount of carbon dioxide emissions. Assuming that the carbon dioxide emissions in nature are expressed by $x(t)$, the reasons for the changes in the carbon dioxide content in the natural environment are nonrenewable. The use of energy, the daily life of people, and the absorption of nature establish

$$\dot{x}(t) = g\left( \frac{\partial f}{\partial Z} \frac{\partial f}{\partial e} \frac{\partial f}{\partial x} \right). \quad (2)$$
3. Experimental Application and Economic Benefits of Nanomaterials in the Field of New Energy and Environment

3.1. Test Subject. In order to make the experimental results we got more convincing, we have carefully selected various survey subjects in the selection of survey subjects, including gasoline-powered cars, rechargeable cars, and new energy vehicles. We used the newly produced car to eliminate the errors in our experiment due to the car. We correctly measured the energy consumed by the three sets of experimental cars driving 1 km, 5 km, 10 km, and 20 km and produced substances that pollute the environment. It is used to analyze the application of nanomaterials in the field of new energy and environment and the economic benefits brought by them.

3.2. Electrochemical Performance Test. An electrochemical workstation connected to a traditional three-electrode system was used to measure the electrochemical performance. The Ag/AgCl electrode was used as the reference electrode, the Pt wire was used as the auxiliary electrode, and the glassy carbon electrode modified with catalytic material was used as the working electrode. Linear sweep voltammetry, the electrochemical experimental technique, is a commonly used electrochemical test method. For example, if the working electrode is a mercury drop electrode, it is derived into various types of polarography, with a scan of 10 mVs⁻¹. Test the rate to get the polarization curve, and the test results were subjected to resistance compensation. The potential can be calculated by a standard hydrogen electrode, and the formula is

\[ E_{\text{RHE}} = E_{\text{Ag/AgCl}} + 0.197 + 0.059 \times \text{PH} \]  

The Tafel slope is calculated by fitting the linear part of the polarization curve, and the formula is

\[ \eta = a + b \times \log(j) \]  

In the above formula, \( \eta, j, a, b \) and \( \Phi \) are overpotential, Tafel slope, current density, and intercept, respectively. The cyclic voltammetry test was performed at a scan rate of 10 mVs⁻¹. The constant current chronopotentiometry test was performed at a current density of 10 mAm⁻². The voltammetry cycle test was carried out at a scan rate of 10–50 mVs⁻¹, and the electrochemical double-layer capacitance was calculated to estimate the electrochemical active surface area. That is to say, in order to evaluate the real catalytic activity of a material, it is often necessary to analyze the surface area that actually participates in the electrochemical catalytic reaction. Therefore, researchers put forward the concept of electrochemical active area. The electrochemical double-layer capacitance can be obtained by two methods: Firstly, measure the electric double-layer capacitance current in the Faradaic interval corresponding to the cyclic voltammetry curves at different scan rates, and calculate it after linear fitting. Secondly, using electrochemical impedance spectroscopy, the corresponding impedance at different frequencies is measured and obtained. Due to the relatively simple process of the former method, the electrochemically active area is often estimated from the electrochemical double-layer capacitance of the catalytic surface. In the electrochemical impedance spectroscopy test, the amplitude of the sine wave is 5 mV, and the frequency sweep range is 10⁻² Hz to 10⁻⁵ Hz.

3.3. Reagents and Instruments. Reagents and instruments are shown in Tables 1 and 2.

3.4. Factor Analysis. Factor analysis is a multivariate statistical analysis method. It starts from studying the internal dependence of variables and transforms variables with complex relationships into some comprehensive factors. In this study, the factor analysis method was used to recombine and classify the application of nanomaterials in the field of new energy and environment and economic benefit indicators and then calculate the factor score to quantitatively evaluate the economic benefits.

\[
\begin{align*}
    x_1 &= a_{11}F_1 + a_{12}F_2 + \cdots + a_{1m}F_m + \epsilon_1 \\
    x_2 &= a_{21}F_1 + a_{22}F_2 + \cdots + a_{2m}F_m + \epsilon_2 \\
    \vdots \\
    x_n &= a_{n1}F_1 + a_{n2}F_2 + \cdots + a_{nm}F_m + \epsilon_n
\end{align*}
\]  

where \( x_1, x_2, \ldots, x_n \) is the observed variable, \( F_1, F_2, \ldots, F_n \) is the common factor, \( \epsilon_1, \epsilon_2, \ldots, \epsilon_n \) is the special factor, and \( a_{ij} \) is the factor loading of variable \( i \) on factor \( j \).

3.5. Gather Data. There are \( m \) groups of samples, and then there are sample groups \( A = \{A_1, A_2, \ldots, A_m\} \). The number of indicators in each program is \( n \) and the corresponding indicator group is \( X = \{X_i, X_2, \ldots, X_n\} \); therefore, the evaluation index \( X_{ij} (i \in [1, m], j \in [1, n]) \), and then the initial evaluation matrix is shown in the following formula:

\[
X = (x_{ij})_{m \times n} = \begin{bmatrix} x_{11} & x_{12} & \cdots & x_{1n} \\
                    x_{21} & x_{22} & \cdots & x_{2n} \\
                    \vdots & \vdots & \ddots & \vdots \\
                    x_{m1} & x_{m2} & \cdots & x_{mn} \end{bmatrix}
\]  

If the dimensions of each evaluation index are different, the Z-Score method is used to perform dimensionless processing on each index, and the reverse index needs to be reversed. On the premise that the inverse index is processed forward, the positive ideal solution and the negative ideal solution are shown in the two following formulas, respectively:

\[
r_{+j} = \max_i r_{ij} \\
r_{-j} = \max_i r_{ij}^{-}\]

The evaluation distance between the group \( x \) sample and the positive ideal solution and the evaluation distance from
the negative ideal solution are shown in the two following formulas, respectively:

\[ d_i^+ = \left( \sum_{j=1}^{n} (r_{ij} - r_{ij}^+) \right)^2 \tag{16} \]

\[ d_i^- = \left( \sum_{j=1}^{n} (r_{ij} - r_{ij}^-) \right)^2 \tag{17} \]

\[ C_i = \frac{d_i^-}{d_i^- + d_i^+}, \quad C_i \in [0, 1] \tag{18} \]

In formula (17), when \( C_i \) approaches 1, the evaluation object reaches a positive understanding; when \( C_i \) approaches 0, the evaluation object reaches a negative understanding. Therefore, the size of \( C_i \) reflects the capacity of a new energy city. The larger \( C_i \) is, the greater the capacity to build a new energy city is.

4. Application of Nanomaterials in the Field of New Energy Environment and Experimental Analysis of Economic Benefits

4.1. Evaluation Index System Based on Index Reliability Testing. Reliability refers to the stability and reliability of the questionnaire. This article adopts the \( \alpha \) coefficient method created by Cronbach. The \( \alpha \) coefficient can be obtained by Reliability Analysis in SPSS software. It is generally believed that the \( \alpha \) coefficient above 0.8 indicates that the effect of index setting is very good, and the \( \alpha \) coefficient above 0.7 is also acceptable. Here we analyze the reliability of each type of object, and the reliability index we choose for each type of object is slightly different. The results are shown in Table 3.

It can be seen from Table 3 that the index test of electric vehicles and new energy vehicles (0.8 > \( \alpha \) > 0.7) is only acceptable; probably because they consume energy and work to produce very little irreversible pollution to the environment, there is no pollution to the environment; and fuel-fueled vehicles cause great pollution to the environment, so the effect of setting the index in this way is very good (\( \alpha \) > 0.8), which is also convenient for us to carry out subsequent experiments.

4.2. Improved Genetic Algorithm Performance Analysis. Before and after the improvement of the genetic algorithm, its performance changes are mainly reflected in two aspects: one is the optimization ability, and the other is the calculation convergence speed. Among them, the introduced population superiority rate comparison refers to the ratio of the average fitness value of the population to the fitness value of the optimal solution at the end of the iteration. The larger the percentage, the higher the superiority of the individuals in the population. In the iterative process, the better the population is, the easier it is to get the optimal solution, as shown in Figure 1.

The convergence speed of the improved genetic algorithm is significantly faster than that of the traditional genetic algorithm. At the same time, it can be found that its optimization ability is stronger, the adaptive operation value increases very quickly, and it approaches the optimal solution faster. Since the probability of crossover and mutation of traditional genetic algorithm is a constant value, its convergence speed is obviously much slower, while the value of fitness mode grows more slowly.

4.3. Based on Three Kinds of Car Driving Conditions

4.3.1. Resource Consumption of Three Kinds of Cars Driving the Same Distance. We first analyze the consumption of resources by the three kinds of cars traveling at the same distance. We select cars to travel 1 km, 5 km, 10 km, and
20 km to analyze the data. When we collect and analyze the data, let 3 participants participate in this experiment. An expert with a wealth of work experience comprehensively scored the energy generated by the car during the driving process and calculated significant differences. The results are shown in Figure 2.

It can be seen from Figure 2 that fuel-fueled vehicles consume the least resources compared to the other two types of vehicles. Because the molecule of gasoline is larger and the same molecule contains more energy, it consumes less resources. If you use electricity directly, you need more energy to generate electricity. Therefore, new energy vehicles will come out at this time. They are both renewable energy and do not directly use electricity. The proportion of new energy power generation continues to increase. It is necessary to keep pace with the times and gradually improve and raise relevant technical standards. This is also a necessary means to maintain the safe operation of the system.

4.3.2. Environmental Pollution Caused by Three Kinds of Vehicles Driving the Same Distance. We analyzed the environmental pollution caused by the three kinds of cars traveling at the same distance. We selected cars to travel 1 km, 5 km, 10 km, and 20 km to analyze the data. When we collected and analyzed the data, we asked the 3 participants, experts with extensive work experience, in this experiment to comprehensively score the energy generated by the car during driving and calculate the significant difference. The results are shown in Figure 3.

It can be seen from Figure 3 that a large amount of environmental pollution has been produced by fuel-fueled vehicles in the course of their minds, especially the incomplete combustion of gasoline over time when vehicles have been used, further increasing the amount of environmental pollution, while electric vehicles and new energy vehicles are in terms of people. Both of these vehicles are worthy of promotion in terms of environmental protection. However, from a long-term perspective, electric vehicles require higher materials for vehicles. According to the positioning of the main power source, new energy power generation is guided to eliminate pure electricity consumption and in order to ensure the safe, stable, and reliable supply of electricity.
4.3.3. Distance Traveled by Three Kinds of Cars Using the Same Quality of Energy. We analyzed the distance traveled by the three types of cars using the same quality of energy and selected the distance traveled by the car’s consumption of 1 liter, 2 liters, 5 liters, and 10 liters. When we collect and analyze data, we let 3 experts with extensive work experience participate in the car’s comprehensive evaluation of the energy generated during the driving process in this experiment and calculate significant differences; the results are shown in Figure 4.

It can be seen from Figure 4 that, under the same quality of fuel, the new energy vehicle travels far longer than the other two vehicles. This is because the new energy molecule is small, and it is easier to completely burn to produce more energy under the same quality, so the new energy is more. It is worthy of vigorous development. Energy is a basic industry that guarantees the development of the national economy. Since the reform and opening up, with the rapid development of our country’s economy, the economic structure that relies on high-energy-consuming industries has also brought about many problems such as shortage of traditional mineral energy, deterioration of the ecological environment, and greenhouse effect.

4.4. Electrochemical Performance Test Results. By adjusting the amount of Na2PdCl4 precursor, a series of products AgPdMo NWs-x (x = 1, 2, 3, 4, and 5) with different Pd/Mo ratios can be obtained. The element ratio of AgPdMo NWs-x was measured by inductively coupled plasma atomic emission spectrometry, and the result is shown in Figure 5.

It can be seen from Figure 5 that, with the increase of Pd content, AgPdMo NWs becomes thicker and denser. After vulcanization, the density of newly formed nanosheets on the surface of AgPdMo NWs decreases with the decrease of Mo content in AgPdMo NWs. The S signal intensity in AgPdMo/MoS2 NWs-x was tested by energy dispersive X-ray spectroscopy, and the result is shown in Figure 6.

It can be seen from Figure 6 that, through energy dispersive X-ray spectroscopy, the S signal in AgPdMo/MoS2 NWs-x becomes weaker with the decrease of Mo content in AgPdMo NWs, indicating the main cause of vulcanization reaction in NWs. It is Mo. The seed crystal generated by the reduction reaction of the Pd precursor can act as a catalytic site to promote the reaction of Ag and Mo and play an important role in the construction of a multilayer heterostructure and the adjustment of the electronic distribution state. In order to further study the catalytic properties of the material, we continued to test the electrochemical impedance spectroscopy of the material, and the results are shown in Figure 7.

It can be seen from Figure 7 that the charge transfer resistance of AgPdMo/MoS2 NWs is the smallest, 259.3 Ω, which has the smallest impedance and the fastest electron transfer rate. The charge transfer resistances of MoS2 NSs, AgPd NWs, and AgPdMo NWs are 37079 Ω, 398.4 Ω, and 916.6 Ω, respectively. This indicates that the Ag-Pd component in the nanowire structure enhances the conductivity of the catalyst material; the MoS2 sheet structure wrapped on the surface of the nanowire greatly increases the active sites for the catalytic reaction. A good electronic channel is formed between the AgPdMo component and MoS2, which can promote a synergistic effect between the two components.
scale commercialization, and the development of catalytic materials that can meet actual needs is facing a huge challenge. Therefore, this article studies the application and economic benefits of nanomaterials in the fields of new energy and environment and provides help to improve energy conversion and economic benefits. Tests have shown that, compared with the other two types of vehicles, fuel vehicles consume the least resources. Although fuel vehicles consume less energy for cars, the pollution caused by fuel and the nonrenewable cost of fuel make them at a disadvantage compared to new energy vehicles. The large-scale application of new nanomaterial technology in high-capacity batteries and automotive materials can greatly reduce the energy consumption of new energy vehicles, thereby improving their performance more effectively and achieving zero pollution emissions. The nanomaterials studied in this paper have been verified by multiple sets of experiments and have great application prospects in the application of new energy vehicles. The advantages of low cost, energy conversion, and performance improvement of storage devices generally promote the mileage and energy saving of new energy vehicles. To sum up, although there are some problems in China's current new energy vehicle industry, these problems are unavoidable in its development. Overall, the development trend of China's new energy vehicles is healthy and stable. Under the trend of low carbon and environmental protection, the future prospects are bright. However, China's new energy vehicle industry has a long way to go. At the current level of technology, efforts to develop in the direction of intelligence, light weight, safety, comfort, and convenience will achieve greater breakthroughs.

### Data Availability

The data of this paper can be obtained by sending an e-mail to the authors.

### Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this work.

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