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The Influence of Jewelry Technology Development on Jewelry Identification

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Abstract: At present, the work of jewelry identification mainly depends on science and technology. I believe that in the future, it will also rely on science and technology to complete the work of jewelry identification. Using science and technology to identify jewelry can avoid the subjectivity of naked eye identification and achieve accurate identification of jewelry. The use of science and technology to complete the identification work is mainly to use high-tech equipment to identify the fineness of jewelry. In a certain sense, the continuous development of science and technology has more advantages than disadvantages for the development of jewelry industry. The use of high-tech equipment to complete jewelry identification is an important guarantee for the accuracy of jewelry identification, which is conducive to the healthy development of the jewelry industry.

Keywords: Jewelry; Development of Science and Technology; Identification

In recent years, with the improvement of China's economic level, the jewelry industry has made considerable achievements. The rapid development of the industry will inevitably lead to market chaos, which challenges the jewelry identification work. Due to the high price and high professionalism of high-tech equipment, the vast majority of jewelry identification work still relies on human resources. Jewelry identification cannot be carried out accurately due to manual work. Therefore, it is necessary to popularize high-tech equipment in the jewelry appraisal industry, help colleagues in the industry learn to use high-tech equipment to complete the jewelry appraisal work, and improve the accuracy of jewelry appraisal work, so as to standardize the development of the jewelry industry.

1. Development status of jewelry industry in China

After the founding of the People's Republic of China, the development of domestic jewelry industry has experienced four stages: stagnation, recovery, development and maturity. From the beginning of 1980s, the domestic jewelry industry began to open up until the establishment of the Shanghai Gold Exchange in 2002. In addition, the income of Chinese residents has been at a low level for a long time, which has led to the domestic jewelry consumption being suppressed for a long time. Therefore, the ancient jewelry industry is still in the sunrise stage in China.

At present, China is one of the few countries in the world where the annual sales of jewelry exceed 30 billion US dollars, and it is the most important emerging jewelry consumer market in the world. Among them, China's consumption of gold, platinum and jade ranks first in the world, while diamond consumption ranks second in the world. In addition, in China, silver, crystal and other fashion decorative products are also popular with young consumers. In terms of domestic jewelry production, China has formed 20 jewelry industry bases including Shenzhen Luohu and Guangzhou Panyu. Through the establishment of industrial clusters, many related enterprises can reduce the cost of the whole industry and improve the operation efficiency of the industry through resource sharing.

2. New development of jewelry identification technology in recent years

With the rapid development of science and technology, jewelry identification technology has made a certain degree of

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development under the promotion of science and technology. In recent years, with the development of science and technology, the new progress of jewelry identification technology is as follows:

2.1 Visible spectrum technology

In the industry, the use of visible spectrum technology for jewelry identification is mainly combined with ultraviolet technology. Using the visible spectrum technology, we can deeply identify the fineness of synthetic gems, gems whose color is modified by radiation, and a few natural gems. For example, we can use the visible spectrum technology to identify whether the fineness of jadeite is given by nature or added artificially in the later stage.

2.2 Lapman spectroscopy

In order to use Lapman spectroscopy to identify jewelry, it is necessary to analyze the chemical composition and element structure characteristics of the samples provided, and use fluid inclusion and solid inclusion to identify the composition and texture of jewelry on the basis of not destroying its integrity. Through this technical means, we can identify artificial gems and judge whether a gem has undergone artificial processing. As the first step of jewelry identification, it is necessary to identify whether jewelry is formed naturally or synthesized. Therefore, this technology is widely used in the jewelry industry, and it is an identification technology that must be mastered by professional staff in the jewelry identification industry.

2.3 Fluorescence analysis technology

Fluorescence analysis technology, like infrared technology, is also used to judge the authenticity of jewelry. The difference between the two is that fluorescence analysis technology can judge the authenticity of jewelry by changing the elements in jewelry.

3. The limitation of jewelry identification technology

There are many kinds of jewelry in nature. Most of the current jewelry identification techniques have limitations to a certain extent. For these limitations, we need to find an effective way to make up for the limitations through scientific and technological research. The following is a brief review of the limitations of jewelry identification technology.

3.1 Red light spectrum technology.

Red light spectrum technology is to observe and analyze the wavelength of the sample by irradiating the sample, so as to analyze the spectral band of the jewelry, and then to identify the true and false. In the jewelry industry, the widely loved emerald can be used to determine whether it is true or false by red light spectrum technology. However, this technology has some limitations, that is, the jewelry surface must be smooth enough to use this technology for identification.

3.2 UV analysis technology

Ultraviolet analysis technology is mainly used in the detection of trace elements in jewelry. The use of ultraviolet analysis technology can accurately analyze the various trace elements in jewelry, and make an accurate judgment on whether it meets the relevant standards. At present, only colored jewelry can use this technology to analyze and identify trace elements.

3.3 Reflection

Using reflection technology to identify jewelry mainly uses the reflection principle of light. This identification technology does not need to purchase expensive related equipment. It can complete the identification work only by identifying the reflected light. Therefore, it is widely used by jewelry identification industry to identify the texture of jewelry. Using the reflection of light to identify jewelry is to use the reflection of light for accurate identification, the probability of error is very small. However, because the reflection technology can only identify the jewelry with analytical structure, it is widely used in the identification of jade, and the original stone cannot be identified with this technology.

4. The positive influence of jewelry technology development on jewelry identification technology

The development of science and technology, for social progress, has a huge role in promoting. Similarly, the development of jewelry technology also has a huge role in promoting the improvement of jewelry identification technology. The application of high-tech instruments in jewelry identification can make up for the shortcomings in the current jewelry identification industry and solve the difficulties.

4.1 Jewelry equipment identification

4.1.1 An electron microscope for scanning

Electron microscope, through its own resolution, can carry out a very in-depth analysis of the texture and composition of

jewelry, and can carefully observe the surface of jewelry, so as to find out the defects that are difficult to be observed by naked eyes, and ensure the accuracy of identification work.

4.1.2 Optical fiber spectrometer

The optical fiber spectrometer has the advantages of small size, easy storage, low production cost and low price. Optical fiber spectrometer is an upgrade on the basis of the original traditional spectrometer to collect more comprehensive data and identify jewelry on the basis of these data. Because of its easy installation and small body, it is widely used by jewelry appraisal industry.

4.1.3 X-ray fluorescence spectrum

X-ray fluorescence spectrum is mainly used to identify the element composition of samples according to the different radiation characteristics and fluorescence of individual elements under the excitation of X-ray. This technology can be used with infrared spectrum and ultraviolet spectrum at the same time to achieve better results. X-ray fluorescence spectrum also has the characteristics of not damaging the jewelry itself, so it is widely used in jewelry identification industry.

4.2 Application of computer software

4.2.1 Application of computer management software

With the rapid development of jewelry industry, the voice of standardization in the industry is growing. The use of computer software in the jewelry industry enterprise manage mentis conducive to enterprise internal strict management based on the scientific point of view. For the problems in the management process, computer technology can be used, combined with the actual situation of the market, so as to quickly make countermeasures, and maintain good market order is not destroyed.

4.2.2 Pattern recognition technology

For the traditional jewelry identification software, it is a leap for the computer to identify the quality of jewelry. Pattern recognition technology can accurately identify the specific texture, true composition and actual density of jewelry, which is based on a set of strict inspection standards. The use of identification technology for jewelry identification can ensure the fairness of jewelry identification, avoid the intervention of subjective factors of naked eye identification, and all identification can be followed, which is conducive to the improvement of identification efficiency.

5. Conclusion

The rapid development of the times has promoted the growth of the jewelry industry. The healthy development of jewelry industry is inseparable from the involvement of scientific and technological means in jewelry identification. Compared with other industries, jewelry identification is more dependent on science and technology. The use of science and technology to carry out identification work, to a certain extent, is to lead the jewelry identification work into a new stage, which is of great significance to the whole jewelry industry. So far, many high-tech technologies, such as infrared analysis technology, have been widely used in the jewelry appraisal industry, which is used as a common technical means of daily monitoring. As jewelry appraisers, they should flexibly apply scientific and technological means to contribute to the healthy development of the jewelry industry.

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