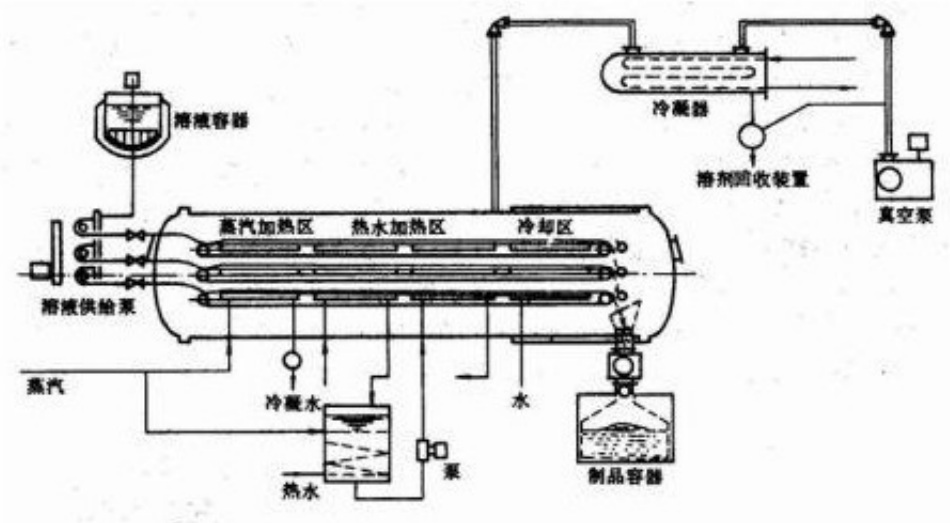
Application of microwave drying technology in China???



1.1 application of microwave drying technology in materials and chemical industry

In order to solve the problems of different particle size, large particle size, irregular shape and serious agglomeration, Ti02 particles were prepared by direct hydrolysis of TiCl4 under microwave dielectric heating and drying conditions. The results show that the microwave heating drying method can solve the above shortcomings, and has the advantages of clean, rapid, uniform, efficient, environmentally friendly, suitable for industrial production, and has a good application prospect.

Hydrothermal treatment can promote the crystallization and grain growth of the sample, microwave drying is smaller than the traditional drying sample grain, higher crystallinity, and can prevent the aggregation of nano-WO3 particles, with better dispersion.

Microwave heating makes the particles more uniform, and the particle size is inversely proportional to the pH value. The addition of surfactant can prevent the agglomeration of nanoparticles.

1.2 microwave drying technology in pharmaceutical machinery

The effects of microwave power on the drying law and the content of effective components of Ginkgo biloba leaves were studied. Different microwave power has great influence on the drying rate. At the end of the dehydration period, the moisture content of Ginkgo leaves is about 10%. Excessive microwave irradiation will lead to the partial degradation of flavonoid glycosides and terpene lactones. The application of microwave drying technology in the drying of fresh ginkgo leaves can greatly improve the space-time benefit. With efficiency and energy saving, it has obvious technical advantages.

The application of microwave drying sterilizer in the production of pellets was studied. The

results showed that microwave made the pellets produce heat in the interior of the pellets, heated uniformly, expanded the pellets, dried quickly and sterilized effectively.

In order to verify the microwave drying technology of Liuwei Dihuang Pills (concentrated pills), the stability of the drying and sterilization effect of Liuwei Dihuang Pills was investigated with the moisture content, dissolution time limit and microbial limit as the indexes. The results showed that the microbial limit index of the pellets at different sampling positions was good. The water content and dissolution time of the dried pellets met the quality standard. The sterilization effect of the microwave drying process was stable and reliable.

The application of microwave drying method in the preparation of Zhijing powder was studied. The difference between microwave drying Zhijing powder and traditional method in the preparation process was compared. The results showed that microwave drying had the advantages of uniform drying, good quality, high speed and high efficiency.

1.3 application of microwave drying technology in mineral industry

It is concluded that the dielectric constant and dielectric loss decrease with the increase of coal grade because the inherent moisture content in coal decreases with the increase of coal grade.

The principle of microwave drying flotation concentrate coal was discussed. The main factors affecting microwave drying of flotation concentrate coal were determined by experiments, such as the effective output power of microwave, the external water content of flotation concentrate coal, the processing capacity and drying time of microwave drying. The feasibility of applying microwave drying technology instead of traditional firepower drying method in coal preparation industry is demonstrated.

In order to reform the traditional drying method of sphalerite, a new drying process of sphalerite by microwave heating was studied, and the dehydration characteristics of sphalerite by microwave drying were studied. The experiment proved that the whole process of microwave drying of sphalerite can be divided into three stages: acceleration, constant speed and speed reduction. Through regression analysis of experimental data, the mathematical model of microwave drying sphalerite is obtained, and the parameters of the model are analyzed and discussed. The results show that the drying rate increases gradually at first, then decreases gradually, which is consistent with the analysis results of experimental data.