

苏州光福瓷石中绢云母的X射线衍射及红外吸收光谱研究

X-ray Powder Diffraction and Infrared Absorption Spectroscopic Study of Sericite from Guangfu Porcelain Stone, Suzhou, Jiangsu Province

中文关键词: [瓷石](#), [陶瓷原料](#), [绢云母](#), [x射线衍射](#), [红外吸收光谱](#)

英文关键词: [Porcelain](#), [ceramic materials](#), [sericite](#), [X-ray diffraction](#), [infrared absorption spectra](#)

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中文摘要:

光福瓷石矿床规模巨大, 矿石主要由颗粒细小的石英(62%±)和绢云母(36%±)组成, 具有中国瓷石富钾、贫铝、高硅、低铁的化学成分特征和典型的梅花状结构。光福瓷石中绢云母为二八面体型, 多型为2M1, 其晶胞参数 $a=5.15\text{Å}$, $b=8.97\text{Å}$, $c=20.10\text{Å}$, $\beta=96.18^\circ$ 。具有结晶度较高、水化程度较低的特征。光福瓷石中绢云母的10和5衍射峰的半高宽 $W1$ 和 $W2$, 基本相等, 表明它是一种不含蒙脱石(间层)的绢云母。根据绢云母的 $d(060)$ 衍射峰和红外吸收光谱 530cm^{-1} 等波数研究, 其八面体晶格中几乎不含Fe、Mg等有害杂质。它的晶体化学式为: $(K0.809Na.037Ca.003)0.849(A12.083Fe0.006Mg0.075)2.164[(Si3.272Al0.728)4O10](OH)2$ 。总之, 光福瓷石矿质量优良, 是陶瓷生产的良好原料。

英文摘要:

The Guangfu porcelain stone deposit is of gigantic size, and the porcelain stone consists mainly of fine-grained quartz (making up some 62%) and sericite (about 36%). It is noted for rich potassium, high silicon, poor aluminium and low iron in chemical composition and shows quincuncial texture typicality of porcelain stone from China. The sericite in the porcelain stone belongs to dioctahedral type with polytype being 2M1 and unit cell parameters being $a=5.15\text{Å}$, $b=8.97\text{Å}$, $c=20.10\text{Å}$ and $\beta=96.18^\circ$. It is characterized by high crystallinity and low degree of hydration. The approximate equality of the peak width $W1$ and $W2$ of basal reflection 10A and 5A suggests that sericite in Guangfu porcelain stone does not contain montmorillonite (interlayer) minerals. According to characteristics of values of $d(060)$ and 530cm^{-1} frequency band, there are almost no such harmful impurities as iron and magnesium in octahedra of the sericite. The chemical formula of sericite is $(K0.809Na.037Ca.003)0.849(A12.083Fe0.006Mg0.075)2.164[(Si3.272Al0.728)4O10](OH)2$. It is therefore concluded that Guangfu porcelain stone is excellent in quality and will serve as a kind of good raw materials for ceramic production.

汪灵, 李朝毅, 1991, 苏州光福瓷石中绢云母的X射线衍射及红外吸收光谱研究[J]. 岩石矿物学杂志, 10(3):270~278.

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