

测试技术

## 蔬菜中西维因农药残留监测用荧光光谱仪的研究

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**摘要** 根据西维因农药受到紫外光激发能够发出荧光的特征, 利用脉冲氙灯作为激发光源, 利用光纤进行传输和探测荧光, 并结合电荷耦合器件(CCD)光谱探测技术, 设计出了一套能够测量农药含量的荧光光谱仪器。分别利用稳态光谱仪和该仪器实现了对黄瓜中西维因农药残留的快速测定。实验结果表明, 在激发波长为319nm和荧光发射波长为647nm情况下, 西维因的线性范围为0.0~120μg / L, 最低检出限LOD为5×10<sup>-7</sup>μg/L,线性相关系数r为0.9991 (S / N=5)。该仪器可满足荧光检测的需要。

**关键词** [西维因](#) [农药残留](#) [荧光光谱](#) [光纤传感](#) [仪器设计](#)

分类号

## Study on Fluorescence Spectrometer for Monitoring Pesticide Residues in Vegetables

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**Abstract** A fluorescence spectrometer which can measure pesticide concentration is designed by using a xenon lamp as excitation light source, employing optical fibers to transmit and detect fluorescence and combining with CCD spectrum determination technology based on fluorescent characteristics of carbaryl that can emit fluorescence as it is excited by UV rays. Moreover, the rapid measurement of carbaryl residues in cucumbers is implemented with a steady state fluorescent spectrograph and the new system respectively. The results indicate that the linear concentration range is 0.0~120.0μg / L for carbaryl, the detection limit (LOD) is 5×10<sup>-7</sup>μg / L, the linear correlation coefficient r is 0.9991 as the excitation wavelength is 319nm and the fluorescence emission wavelength is 647nm. The data prove up to the hilt that the instrument meets the demand of fluorescence detection.

**Key words** [carbaryl](#) [pesticide residue](#) [fluorescence spectrum](#) [optical fiber sensing](#) [instrument design](#)

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