

理论研究

小波阈值去噪法在农药荧光分析中的应用

王玉田, 李艳春

燕山大学仪器科学系, 河北秦皇岛 066004

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摘要 在农药荧光分析中,

最大峰值波长对应的荧光强度的信息直接关系到检测的精度。该文提出用小波变换法对测得的农药荧光光谱进行消噪处理。鉴于软阈值和硬阈值2种方法均存在一定的缺陷, 介绍一种新的阈值处理方法——软硬阈值折衷法, 并将使用该方法进行小波去噪后的荧光光谱图与用传统模拟低通滤波器去噪后的光谱图进行了比较。结果表明, 经小波去噪后的荧光光谱图更多地保留了原信号的信息, 有助于提高系统的检测精度。

关键词 [荧光光谱](#) [小波去噪](#) [农药](#) [小波阈值](#) [软硬阈值折衷法](#)

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Application of wavelet threshold denoising method in the fluorescence analysis of pesticides

WANG Yu-tian, LI Yan-chun

Department of Instrument Science, Yanshan University, Qinhuangdao 066004, China

Abstract In the fluorescence analysis of pesticides, the fluorescence intensity corresponding to the maximum peak is always chosen as the research subject. In order to obtain the fluorescence intensity of the measured pesticide more accurately and further improve the detection accuracy of the pesticide residues in food, the wavelet transformation is adopted to conduct the denoising process for the measured fluorescence spectrum of the pesticide. In view of the disadvantages of the soft threshold and the hard threshold methods, a new threshold method, i.e. soft and hard threshold tradeoff method is introduced. The denoised fluorescence spectrum via the wavelet transformation using this threshold method is compared to the denoised spectrum via the analog low pass filter. The result shows that the denoising spectrum via the wavelet transformation keeps more information for the original signal. Thus the detection accuracy of the system will be improved with the aid of this method.

Key words [fluorescence spectrum](#) [wavelet denoising](#) [pesticide](#) [wavelet threshold](#) [soft and hard threshold tradeoff method](#)

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通讯作者 王玉田

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