

计量测试

基于小波变换的叶绿素荧光光谱测量系统研究

王书涛¹, 王玉田², 车仁生¹, 汪翔², 金海龙¹

1.哈尔滨工业大学 自动化测试与控制系, 哈尔滨 150001; 2.燕山大学 电气工程学院, 河北 秦皇岛 066004

收稿日期 修回日期 网络版发布日期 2007-1-27 接受日期

摘要

介绍一种基于小波变换的测量海藻中叶绿素a/b的全光纤荧光光谱在线测量系统. 根据小波变换具有将频率按大小分解的特性, 本系统将其与荧光法、光纤技术相结合用于含叶绿素a/b的藻类荧光光谱的测量、平滑和重叠荧光峰的解析. 该系统具有小型化、结构简单、探头无源、所得光谱变形小、多参数同时测量等特点. 实验证明, 该测量方法是完全可行的.

关键词 [小波变换](#) [叶绿素a/b](#) [光纤技术](#) [荧光法](#) [在线测量](#)

分类号 [Q949.2](#) [Q331](#)

Research on the System Based on Wavelet Transform for Measuring Fluorescence Spectrum of Chlorophyll-a/b

WANG Shu-tao¹, WANG Yu-tian², CHE Ren-sheng¹, WANG Xiang², JIN Hai-long¹

1. Department of Automation Measurement and Control Engineering, Harbin Institute of Technology, Harbin 150001, China; 2. Department of Instrument Science and Engineering, Yanshan University, Qinhuangdao 066004, China

Abstract

An on-line all optical-fiber fluorescence spectrum measuring system which can simultaneously measure Chlorophyll-a and b fluorescence spectrum in alga is introduced. Since wavelet transform can decompose signals into localized contributions of different frequency, it is applied to the technology of optical fiber and fluorescence methods to measure and to smooth the fluorescence spectrum of alga contained Chlorophyll-a and Chlorophyll-b. On this condition, the overlapping fluorescent peaks was resolved. It has the advantages of minitype, simple structure, passive sensing head, little spectral deformation, simultaneous multi-parameter measurement. It has been testified that this method is practicable.

Key words [wavelet transform](#) [Chlorophyll-a and b](#) [optical-fiber technology](#) [fluorescence method](#) [on-line measurement](#)

DOI:

通讯作者 王书涛

扩展功能

本文信息

- ▶ [Supporting info](#)
- ▶ [PDF\(255KB\)](#)
- ▶ [\[HTML全文\]\(0KB\)](#)
- ▶ [参考文献](#)

服务与反馈

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [复制索引](#)
- ▶ [Email Alert](#)
- ▶ [文章反馈](#)
- ▶ [浏览反馈信息](#)

相关信息

- ▶ [本刊中 包含“小波变换”的 相关文章](#)
- ▶ [本文作者相关文章](#)

- [王书涛](#)
- [王玉田](#)
- [车仁生](#)
- [汪翔](#)
- [金海龙](#)