

论文

用于FTIR大气成分监测的太阳跟踪系统设计

汪芳;刘建国;高闽光;陆钒;王亚平;陈军;刘志明;金岭

中国科学院安徽光学精密机械研究所环境光学与技术重点实验室, 安徽合肥230031

摘要:

介绍研制的太阳跟踪和傅里叶变换红外(FTIR)光谱技术相结合的大气成分监测系统。该系统跟踪部分以ATmega128芯片为控制核心, 结合光学、电子学、GPS模块、PSD位置传感器以及机械部分完成对太阳运行的实时跟踪, 利用FTIR光谱仪和计算机处理得到的光谱数据用于大气成分的监测。通过实验验证, FTIR大气成分监测系统运行稳定、可靠, 跟踪精度在0.3°以内。

关键词: 太阳跟踪; FTIR; PSD; GPS

Design of sun tracking system for FTIR monitoring of atmospheric composition

WANG Fang; LIU Jian-guo; GAO Min-guang; LU Fan; WANG Ya-ping; CHEN Jun; LIU Zhi-ming; JIN Ling

Key Laboratory of Environmental Optics and Technology, Anhui Institute of Optics and Fine Mechanics, CAS, Hefei 230031, China

Abstract:

An atmospheric composition monitoring system, in which the sun-tracking and FTIR spectroscopy are combined, is introduced. The ATmega 128 chip is used as a controlling core of the tracking section of the system to realize real-time tracking of the sun in combination with the optics, electronics, GPS module, PSD position sensor and mechanical section. The spectral data gained by FTIR spectrometer and the computer is applied to the atmospheric composition monitoring. The system was verified by the experiments. The experiments show that the system is stable and reliable, and its tracking accuracy is within 0.3°.

Keywords: sun-tracking FTIR PSD GPS

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通讯作者: 汪芳(1984-), 女, 中国科学院合肥物质科学研究院在读研究生, 主要从事电子学方面的研究工作。

作者简介:

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