传感技术学报
中国微米纳米技术学会
全国高校传感技术研究会 主

可调谐激光二极管吸收光谱残余光强调制补偿技术研究

作　者：梁波, 朱永, 鲍伟义, 陈俊清, 张军, 陈俊

单　位：重庆大学光电工程学院光电技术及系统教育部重点实验室

基金项目：国家“863”计划

摘　要：

分析了可调谐激光二极管吸收光谱仪器中残余光强幅度调制对谐波探测和全数字化信号处理的影响；搭建了基于电压可调谐光强衰减器(MEMS VOA)的光强残度调制的补偿实验系统平台；实验结果表明，本补偿装置可以把残余光强调制降低到补偿前的1/20，并将其带来的二次谐波线型畸变降低60%以上；初步证实了用本方法消除二次谐波畸变并实现全数字化处理的可行性。

关键词：吸收光谱；残余光强调制；衰减器；补偿

Study on the Compensation Technology of Remaining Light Intensity Modulation in TDLAS

Author's Name:

Institution:

Abstract:

The influence of the remaining intensity modulation on second harmonic detection and digital signal processing in tunable diode laser absorption spectroscopy system w analyzed. A synchronous compensation method was put forward and an experimental setup based on the variable optical attenuator (MEMS VOA) was put up. The experimental result shows that with the synchronous compensation of the VOA, the remaining intensity modulation level was dropped down to 1/20 of its original level, a about 60% of the second harmonic distortion was removed. The feasibility of this synchronous compensation method was tentatively demonstrated by our experiments.

Keywords: absorption spectroscopy; remaining light intensity modulation; attenuator; compensation

投稿时间：**2010-01-20**