INEXPENSIVE INTERFEROMETRIC WAVEMETER FOR VISIBLE/NEAR-IR LASERS

J. DiGANGI, Y. DING, and B. J. McCALL, *Department of Chemistry, University of Illinois at Urbana-Champaign, Urbana, IL 61801*.

Although the use of frequency standards is essential for precise wavelength calibration of spectra obtained with tunable lasers, wavemeters are convenient tools for rough wavelength calibration. However, commercial wavemeters are often cost-prohibitive.

We have constructed a low-cost wavemeter based on a Michelson interferometer, that is based on the design of P.J. Fox et al.[a] Our wavemeter uses a HeNe laser as a reference and is capable of picometer accuracy in the 400 nm – 1 μm wavelength range. We will describe the mechanical design and optical layout of the wavemeter, and discuss the home-built digital electronics that count the fringes. We will also discuss our recent efforts to automate the wavemeter and interface it to a PC for real-time wavelength calibration during laser scanning.

[a] P. J. Fox et al., Am. J. Phys. 67, 624-630 (1999).