

Abstract Submitted
for the DFD12 Meeting of
The American Physical Society

Micro-Particle Image Velocimetry using Microfabricated Diode Lasers NICHOLAS JUDY, UC Santa Barbara — Microfabricated diode lasers are interfaced with PDMS microchannels using in-plane waveguides. This allows for micro-PIV measurements to be obtained in the microchannel, without the requirement of large external Nd:YAG lasers, which are commonly used in traditional micro-PIV. The microfabricated diode laser has a peak wavelength of 532nm and produces up to 200mW of power. PDMS waveguides are designed in-plane and perpendicular as a part of the PDMS microdevices and coupled to the microfabricated laser using an optical fiber. Two types of waveguides are designed: a PDMS waveguide and a microfluidic waveguide. The PDMS waveguide involves a two-step soft-lithography process to give a difference in index, while the microfluidic waveguide uses oil as the waveguide medium. Limitations of the current technique and its potential impact on the future of micro-PIV will be presented.

Nicholas Judy
UC Santa Barbara

Date submitted: 03 Aug 2012

Electronic form version 1.4